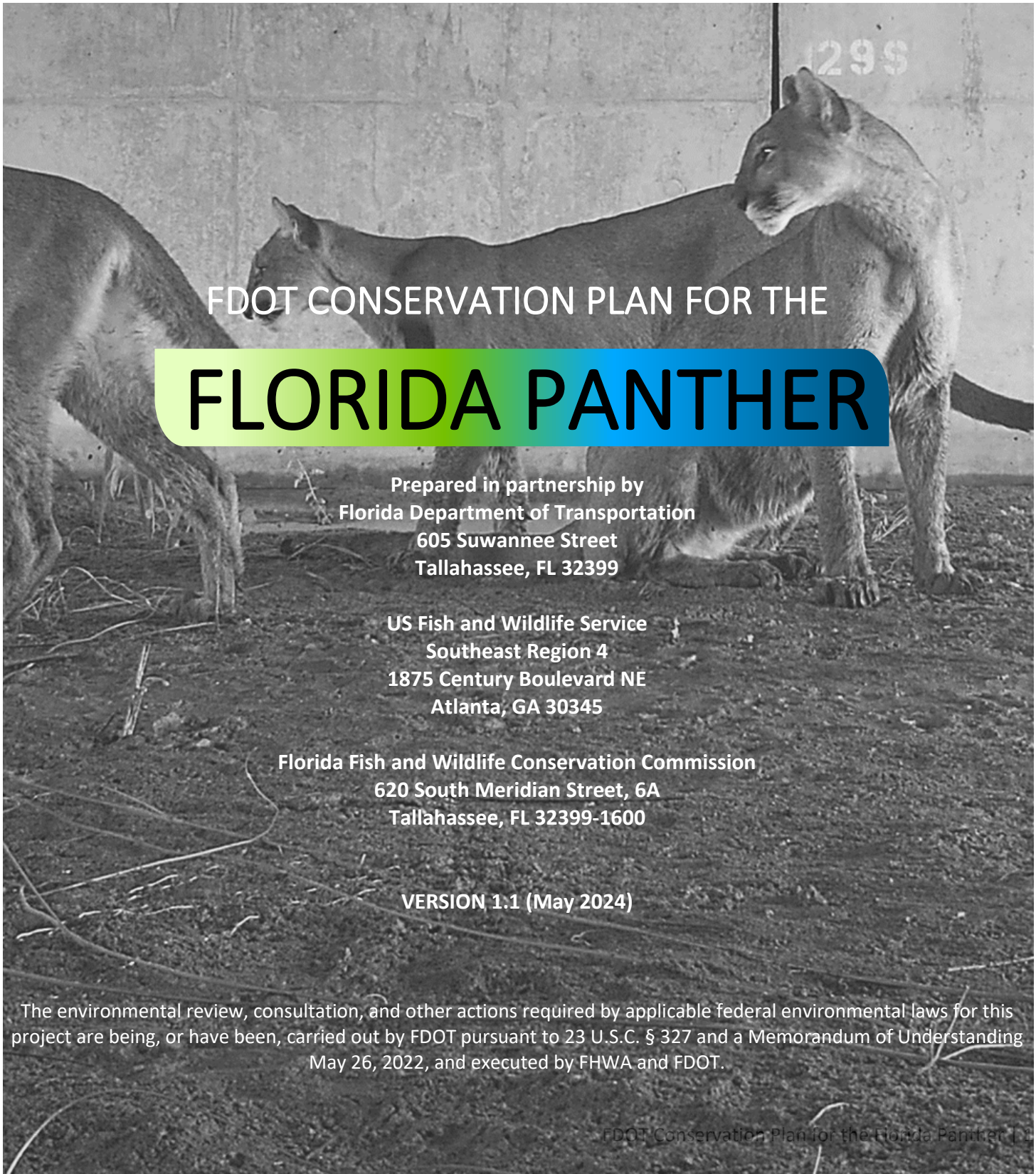
Office of Environmental Management

ENVIRONMENTALLY RESPONSIBLE TRANSPORTATION DELIVERED



FDOT CONSERVATION PLAN FOR THE

FLORIDA PANTHER

Prepared in partnership by
Florida Department of Transportation
605 Suwannee Street
Tallahassee, FL 32399

US Fish and Wildlife Service
Southeast Region 4
1875 Century Boulevard NE
Atlanta, GA 30345

Florida Fish and Wildlife Conservation Commission
620 South Meridian Street, 6A
Tallahassee, FL 32399-1600

VERSION 1.1 (May 2024)

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding May 26, 2022, and executed by FHWA and FDOT.

DocuSigned by:

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(signature)

Jennifer Marshall, P.E.
Director, Office of Environmental Management
Florida Department of Transportation

ENVIRONMENTALLY RESPONSIBLE TRANSPORTATION DELIVERED

Table of Contents

FORWARD

The Florida Department of Transportation (FDOT) would like to recognize the efforts of agencies such as the US Army Corps of Engineers, the Bureau of Land Management, and the US Fish and Wildlife Service (USFWS) for their leadership in developing Section 7(a)(1) programs. Their Section 7(a)(1) documents provided valuable examples to model this conservation plan after. Several concepts from these examples, including background information, guiding principles, layout, content, and the Section 7(a)(2) process have been adapted to meet the needs of the FDOT, USFWS, and Florida Fish and Wildlife Conservation Commission (FWC) for purposes of supporting Florida panther recovery goals through this conservation plan.

EXECUTIVE SUMMARY

The purpose of this FDOT Conservation Plan for the Florida Panther (Plan) is to provide framework for net conservation benefit through implementation of the Florida Department Of Transportation (FDOT) surface transportation program while supporting the US Fish and Wildlife Service (USFWS) recovery goals for the Florida panther. Achieving these goals will be assisted by reducing wildlife vehicle collisions (WVCs), providing opportunities for range expansion, public education and outreach, and other innovative conservation measures. This Plan will provide several tools, a suite of conservation measures, and other processes that can be implemented by FDOT in coordination with the USFWS, Florida Fish and Wildlife Conservation Commission (FWC), and other partners. Under the FDOT National Environmental Policy Act (NEPA) Assignment Program, the Office of Environmental Management (OEM) has been assigned and carries out or oversees Endangered Species Act (ESA) responsibilities for FDOT including those under Section 7(a)(1). This Plan supports FDOT's responsibilities under the ESA.

FDOT is responsible for over 12,000 center lane miles of roads on the State Highway System (SHS) and FDOT has over 6600 state owned bridges on the SHS. Florida has 21.5 million residents and sees over 79 million visitors annually. With Florida's current population increasing by approximately 800 people per day, safe and efficient transportation infrastructure will continue to be a critical need for the state of Florida.

As development pressures continue to be a concern for the recovery of panthers, FDOT anticipates additional project delays or potentially costly modifications could occur without implementation of this Plan. For both FDOT and USFWS to meet their agency objectives this Plan will help establish a holistic framework of panther conservation measures by looking at the state transportation system regionally where it intersects with panther habitat and expansion areas, we are better positioned to meet recovery goals and implement transportation projects on the roadway network. In addition, FDOT, USFWS, FWC and other stakeholders working in tandem will bolster our collective decision-making.

The scope of this Plan will address all FDOT surface transportation actions/activities (see the Section on ***Authorized Projects/Activity Types/Descriptions*** for more details) within panther habitat ranging from routine maintenance activities to new roadways.

FDOT began constructing wildlife crossings in the early 1990s. Since then, as both the panther and the human populations have grown, FDOT has demonstrated a strong track record of implementing mechanisms aimed to reduce WVCs statewide with the most significant efforts occurring within panther habitat. While many of these efforts have been the result of project consultation through section 7(a)(2) of the Endangered Species Act (ESA) (16 U.S.C. §1536(a)(2)), several of these actions have been implemented by FDOT to provide a conservation benefit outside of the consultation process.

Conservation measures outlined within this Plan serve as a guide for meeting the goals and objectives of the program and do not obligate FDOT to undertake specific actions at specific times. Rather, implementation of these conservation measures is contingent upon opportunity, prioritization under the Plan, and is contingent upon the annual work program budget and/or other budgetary constraints. Actions undertaken by FDOT to support specific conservation measures will be coordinated with USFWS and FWC and reported annually. An annual prioritization methodology specific to wildlife crossing conservation measures is included in **Appendix E**. In addition, various funding opportunities are described in the funding framework (**Appendix F**) to provide maximum flexibility.

INTRODUCTION

The purpose of the Endangered Species Act of 1973 (16 U.S.C. § 1531 et seq.) (ESA or Act) is to provide a program for the conservation of threatened and endangered species and their ecosystems on which they depend (ESA section 2(b)). Section 4 of the ESA sets forth provisions to list species as threatened or endangered and plan for their recovery. In addition, the ESA provides for the conservation and protection of listed species through land acquisition (section 5), cooperation with States (section 6), ensuring actions are not likely to jeopardize or adversely modify designated critical habitats (section 7(a)(2)), various prohibitions (section 9), and permitting certain activities (section 10). The focus of this agreement is found in the provision at Section 7(a)(1) which establishes the shared responsibility and cost of listed species recovery by directing all Federal agencies to utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered and threatened species (50 CFR 402.01). Section 7(a)(1) provides a path to identify and focus listed species conservation efforts for a Federal agency's authority and/or program footprint, which together will cumulatively promote proactive recovery of listed species.

Pursuant to 23 United States Code (U.S.C.) 327 and the implementing Memorandum of Understanding (MOU) executed on May 26, 2022, the Florida Department of Transportation (FDOT) has assumed Federal Highway Administration's (FHWA) responsibilities under the National Environmental Policy Act (NEPA) for highway projects on the State Highway System (SHS) and Local Agency Program (LAP) projects off the SHS. In general, FDOT's assumption includes all highway projects in Florida whose source of federal funding comes from FHWA, or which constitute a federal action through FHWA (e.g., projects on the interstate system). This includes responsibilities for environmental review, interagency consultation pursuant to Section 7(a)(2) of the ESA and other activities pertaining to the review or approval of NEPA actions. Consistent with law and the MOU, FDOT acts as the Lead Federal Agency for highway projects with approval authority resting in the FDOT Office of Environmental Management (OEM).

Under the NEPA Assignment Program, OEM has been assigned and carries out or oversees ESA responsibilities for FDOT including those under Section 7(a)(1). USFWS has encouraged federal partners (e.g., FDOT through NEPA Assignment) to apply their underutilized Section 7(a)(1) responsibility to assist in recovery of listed species. Consequently, FDOT has partnered with the US Fish and Wildlife Service (USFWS) and the Florida Fish and Wildlife Conservation Commission (FWC) (through section 6) to develop a Conservation Plan for the Florida Panther (Plan) through section 7(a)(1) of the ESA. The intent of this Plan is for the FDOT transportation program to support the USFWS recovery goals for the Florida panther (referred to as panther hereafter) while providing a more efficient and effective consultation process for FDOT actions. Specifically, the plan is focused on reducing wildlife vehicle collisions (WVC), providing opportunities for range expansion of the panther, public education and outreach, and other innovative conservation measures that together provide a net conservation benefit to the species.

FDOT also has projects that are state funded and become federalized through a permit (e.g., US Army Corps of Engineers permit under Section 404 of the Clean Water Act, or a US Coast Guard Bridge Permit through Section 9 of the Rivers and Harbors Act of 1889), or non-federal actions where Section 10 of the ESA is applicable instead of Section 7. FDOT, USFWS, and FWC will use this Plan for transportation projects as technical assistance to inform Section 7 consultation under the lead permitting agency or for avoiding and minimizing adverse effects to the panther when Section 7 does not apply. No additional conservation measures for the panther beyond those agreed to as a result of consultation or technical assistance through the implementation of this Plan would be required when obtaining permits.

The use of wildlife crossing has proven to be an effective mitigation measure to reduce the number of wildlife vehicle collisions on the SHS. The Florida Department of Transportation has a 30-year history of including wildlife crossings on SHS projects with the first crossings constructed along Alligator Alley (Interstate 75) circa 1990. Since this time FDOT, in coordination with USFWS, FWC, Non-Governmental Organizations (NGOs), and academic partners, has continually enhanced the approach to implementing wildlife crossings by:

- improving data collection
- refining design elements
- developing retrofit options for cost effective implementation
- enhancing wildlife crossings siting analysis
- strengthening agency partnerships
- strengthening NGO and private landowner coordination
- conducting research and collaborating with academia
- implementing pre and post construction camera trapping
- creating GIS data layers for planning
- sharing our stories
- and applying lessons learned

FDOT has implemented various methods aimed to reduce WVC including:

- traditional dedicated wildlife crossing underpasses (bridges and culverts)
- wildlife crossing shelves
- directional barriers (e.g., fencing, walls), with jump outs when needed
- reduced nighttime speed limits
- wildlife signage
- roadside animal detection systems
- opportunities for wildlife crossings that coincide with greenways and trails (e.g., hiking, equestrian, paddling) or cattle and farm crossings where compatible
- public education and outreach

FDOT has constructed and maintains 58 existing wildlife crossings (see ***Figure 1***) within the current panther focus area and over 200 crossings statewide, many of which can support panther range expansion. Since 2015 FDOT has been using wildlife cameras to inform decision making for appropriate crossing locations and monitor wildlife utilization of new structures. To date, more than 150 bridges have been monitored and more than 5,000 pictures and videos have been added to the ***FDOT Wildlife Bridge Crossings*** GIS website which was created to share this data. These pictures and videos demonstrate the effectiveness of wildlife crossings, not just for the panther, but for their prey species such as deer, racoons, rabbits, and wild hogs. The crossings are also effective for other at-risk species such as the spotted skunk, fox squirrel, and eastern indigo snake. Common species such as black bears, river otters, bobcats, and rabbits regularly use these crossings. Several birds such as turkey, egrets, and herons have been documented using some of these locations as well.

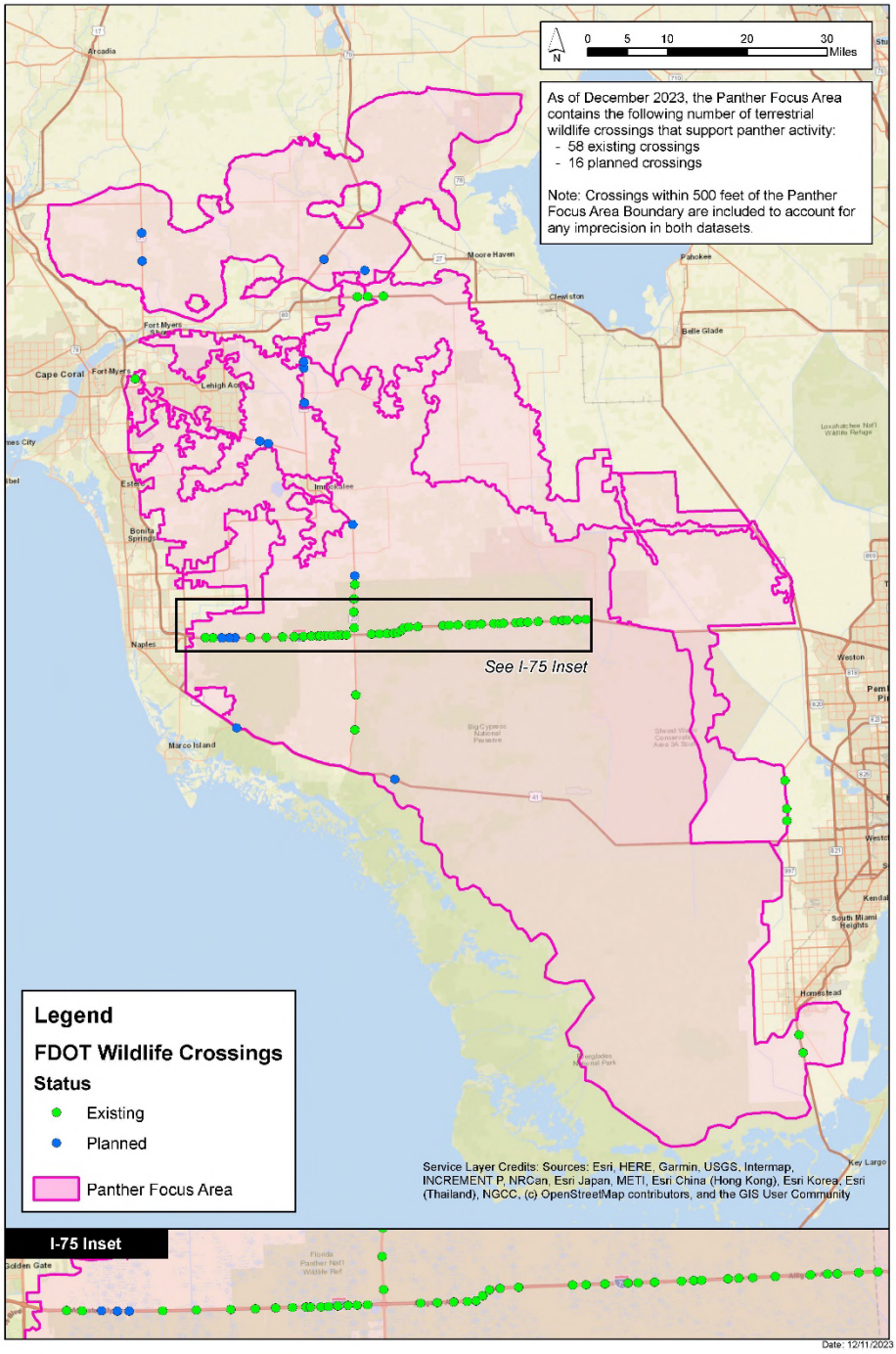


FIGURE 1 FDOT TERRESTRIAL WILDLIFE CROSSINGS WITHIN THE PANTHER FOCUS AREA BOUNDARY

FDOT currently has 16 additional planned crossings in the panther focus area, as well as others that would also support reduced WVCs and panthers dispersing further north in the state (see ***Figure 2***). While infrastructure reducing WVCs is most often incorporated into a transportation improvement (e.g., capacity project, new bridge, maintenance efforts), FDOT has also been successful implementing "retrofit" crossings and fencing installations into resurfacing or maintenance projects.

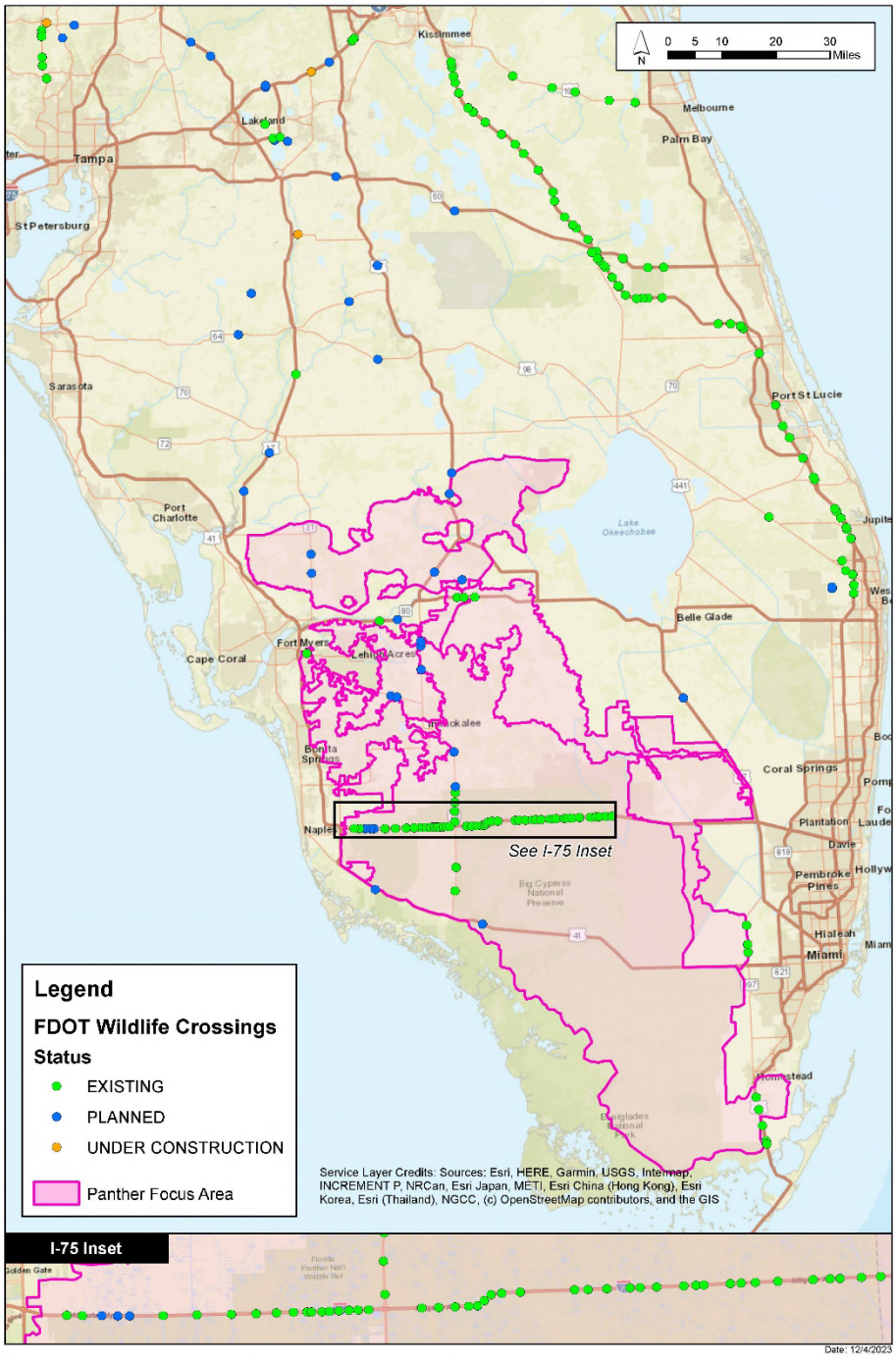


FIGURE 2 FDOT TERRESTRIAL WILDLIFE CROSSING LOCATIONS IN SOUTH FLORIDA

Typically, FDOT approaches endangered species consultation on a project-by-project basis through Section 7(a)(2) of the ESA. This includes consultation during the Project Development and Environment (PD&E) phase for federal projects (through NEPA) and technical assistance for state projects (through State Environmental Impact Reports). Re-initiation of consultation is often required during the subsequent project phases to support environmental permitting, fulfill project commitments, or address project changes since the PD&E study during environmental re-evaluations. For projects that do not have a PD&E phase (typically approved as "Type 1" Categorical Exclusions or Non-major State Actions), consultation occurs during the Design phase for each project. This traditional approach to species consultation can cause delays in project delivery and increased project costs.

USFWS is required to review the effects of the "action" when considering projects one at a time. Panthers have a low population size and individual panthers have large home ranges. These population characteristics coupled with (1) comparatively small road project segments; (2) vehicle mortality being a leading known cause of panther deaths; and (3) the continued increase in human population growth for the state make project specific consultation complex. It is challenging to consider the effects to panthers from a single FDOT project in isolation from other ongoing or concurrent projects on the SHS and other local or private developments with potentially confounding effects. As development pressures continue to be a concern for recovery of panthers, FDOT anticipates additional project delays or potentially costly modifications. In order for both FDOT and USFWS to meet their agency objectives this Plan will help establish a holistic framework of panther conservation measures by looking at the state transportation system regionally where it intersects with panther habitat and expansion areas to be better positioned to meet recovery goals and implement transportation projects on the roadway network. In addition, FDOT, USFWS, FWC and other stakeholders working in tandem will bolster our collective decision-making.

FDOT and USFWS also have a proven track record of developing programmatic approaches (PA) to address species consultation for transportation projects. To date, FDOT and USFWS have developed three Florida specific PAs; one for freshwater mussels, one that addresses multiple species and associated conservation measures for a suite of minor transportation activities (within existing right of way), and one that supports recovery of the Panama City crayfish through Section 7(a)(1) consultation. In addition, FDOT has applied for coverage under the Nationwide Monarch Butterfly Candidate Conservation Agreement with Assurances. The USFWS has developed many programmatic consultation keys with the US Army Corps of Engineers Jacksonville District which FDOT uses regularly (based on letter agreement with USFWS, **Appendix A**). FDOT understands the importance of documentation, implementing required conservation measures, and reporting actions when applying PAs or consultation keys to transportation projects. There is an economy of scale when considering groups of projects.

Several key federal and state bills and programs have been recently implemented:

- 2021 – Florida Wildlife Corridor Act
- 2022 – Bipartisan Infrastructure Law - including the Wildlife Crossing Pilot Program
- 2023 – USFWS announcement of the initiation of the Land Protection Program for Southwest Florida Fish and Wildlife Conservation Area
- 2023 – Moving Florida Forward announcement which includes a project with key wildlife crossings supporting range expansion

  These laws and programs encourage FDOT and our partners to further bolster our efforts by implementing a system-wide approach to support panther recovery goals both with traditional wildlife crossings and with new and innovative conservation measures and partnerships outlined in this Plan. This Plan represents a paradigm shift in which a primary threat to the panther is anticipated to become a primary conservation tool. Successful section 7(a)(1) cooperative conservation intends to align expertise, capability, opportunities, and operations within Federal programs to cost-effectively achieve positive conservation outcomes using existing resources and authorities. This can be accomplished by considering and incorporating conservation measures throughout the transportation program and applying ecological engineering opportunities along the SHS. Much like FDOT's Target Zero initiative to reduce the number of transportation-related human serious injury and deaths across Florida, an ambitious goal of the Plan is to also reduce the number of panther vehicle collisions on the SHS to zero.

Background – Section 7(a)(1) Responsibilites

As described in the Introduction, FDOT regularly conducts endangered species consultation through section 7(a)(2) of the ESA, which requires Federal agencies to ensure that their actions do not jeopardize the continued existence of listed species or adversely modify their critical habitats within defined action areas. Conversely, the direction in section 7(a)(1) applies widely to authorities or programs and directs federal agencies to conserve and recover listed species and to use their authorities in the furtherance of the purposes of the ESA so that listing is no longer necessary (50 Code of Federal Regulations (CFR) §402). Section 7(a)(1) conservation plans are developed with a vision that recovery can be achieved and with the intent that the action agency conservation measures identified and incorporated into the plan will be institutionalized, regardless of the listing status under the ESA (i.e., the program can support post-delisting measures). In the absence of an effective conservation plan under 7(a)(1), albeit unlikely, future transportation projects in compliance with section 7(a)(2) consultations could potentially lead to a progressive decline of the panther and their habitat. This declination of the panther would limit future options for FDOT to address adverse effects caused by transportation actions. Therefore, FDOT, USFWS, and FWC felt it was paramount to establish the FDOT Conservation Plan for the Florida Panther (Plan).

This Plan complies with the original intent of the ESAto minimize conflict and facilitate positive federal and state interagency collaboration, as well as leverage partnerships with other stakeholders. In addition, conservation measures in this Plan applied across the species' range that result in an improved species baseline will benefit all federal agencies (as well as private development seeking permits through federal agencies) as the improved status of the panther will result in greater flexibility in future section 7(a)(2) consultations. This approach also benefits the taxpayer by providing a pathway to collaborative implementation, cost-sharing, cooperative monitoring, and adaptive management.

Section 7(a)(1) consultation through this Plan allows FDOT USFWS, and FWC to use and share their expertise and collaborate on priorities. FDOT, as the action agency, is the authority on agency mission, strategy, design, and execution, and is the authority on how, where, when, and to what extent actions may be modified to provide conservation opportunities and benefits. FDOT also has species experts, however the USFWS is the authority on the species' biology, ecology, and habitats, and can provide perspective and guidance on potential responses of the species to proposed methods and actions. FDOT will continue to engage the USFWS's regional species lead biologist, as well as appropriate FWC biologists, so they are aware of or involved in various levels of planning for and implementing conservation measures. Utilizing outside experts, where and when appropriate, can help to alleviate and mediate conflicts.

This Plan is not intended to take the place of section 7(a)(2) consultations. Section 7(a)(2) consultations will still occur on a project-by-project basis in support of FDOT's NEPA analysis, review, and approval process at the appropriate time in the project schedule, or through technical assistance when a state level environmental review process is appropriate (e.g., no federal funds). If, as per section 7(a)(2), actions proposed in a section 7(a)(1) conservation plan are not likely to adversely affect any endangered or threatened species, the USFWS's review and evaluation will be provided via concurrence under the informal consultation process. Any adverse effect to the species that may result from agency actions will be considered and addressed via the section 7(a)(2) formal consultation process; however, this consultation process will be streamlined due to the overall net conservation benefit that should accrue to a species under the section 7(a)(1) program. Additional information concerning components of a USFWS review is presented in **Appendix B**.

Purpose and Scope

FDOT's vision statement is "…we serve the people of Florida by providing a transportation network that is well planned, supports economic growth, and has the goal of being congestion and fatality free." FDOT's mission is to "provide a safe transportation system that ensures mobility of people and goods, enhances economic prosperity, and preserves the quality of our environment and communities". While FDOT has offices that support aviation, freight and rail, public transit, seaports, and space ports, this Plan will primarily address projects and activities FDOT undertakes to support surface transportation needs on the SHS or those off-system projects approved through the FDOT NEPA Assignment program (e.g., Local Agency Program or LAP projects).

FDOT is responsible for over 12,000 center lane miles of roads on the SHS and FDOT has over 6,600 state owned bridges on the SHS. Florida has 21.5 million residents and sees over 79 million visitors annually. With Florida's current population

increasing by approximately 800 people per day, safe and efficient transportation infrastructure will continue to be a critical need for the state of Florida.

The purpose of this Plan is to provide a net conservation benefit through implementation of the FDOT surface transportation program while supporting the USFWS recovery goals for the panther, specifically by reducing WVCs, providing opportunities for range expansion, public education and outreach, and other innovative conservation measures. This Plan will provide several tools, a suite of conservation measures, and other processes that can be implemented by FDOT in coordination with the USFWS and FWC which include:

- methodologies to prioritize locations of wildlife crossings
- funding mechanisms to support construction of crossings or conservation land acquisition
- innovative conservation measures to support range expansion
- innovative conservation measures to support public education
- partnership and collaboration opportunities with other federal, state, regional, private, and NGO stakeholders
- adaptive management strategies
- reporting requirements and regular coordination intervals between FDOT, USFWS, and FWC (and other stakeholders as appropriate)

The scope of this Plan will address all FDOT surface transportation actions (see ***Authorized Projects/Activity Types/Descriptions*** for more details) within panther habitat ranging from routine maintenance activities to new roadways. As described in the Introduction, FDOT has projects that can be federalized as an FHWA action through the NEPA Assignment Program, through federal permitting, or that may not require federal authorization at all. This Plan can be used for FDOT projects that fall under any of these scenarios. The ***Partnerships/Use of Conservation Plan by Others*** section describes use of this Plan by other entities. It explains how federal and state permitting agencies should apply this Plan for FDOT actions; provides for the possibility of entities conducting activities off the SHS to participate; provides for the possibility of private entities to participate; and describes how other conservation partners (e.g., state agencies, NGOs) can be involved. The ***Plan Expansion Opportunities for FDOT in the Future*** section contemplates expanding the goals of this Plan to other species in the future.

The scope of this Plan is anticipated to be implemented incrementally. FDOT will initially focus on areas within FDOT District 1 (see map in **Appendix C**) which is in the heart of panther territory. FDOT expects to widen the reach of this Plan to other Districts within a few years after initial implementation with a goal to do it as soon as practicable. This will allow time for refinement of the methodologies and mechanisms noted above, while being able to address the region of the state with the most critical need first. See additional information in ***Plan Expansion Opportunities for FDOT in the Future***.

Guiding Principals

i. The Conservation Plan for the Florida Panther (Plan) has a visible and significant potential to benefit both the panther and FDOT's mission.

ii. The goals of this Plan are to:

   a. Offset anticipated adverse impacts from routine action agency operations; and,

   b. Achieve a net gain in listed species population and/or habitat baselines.

iii. This Plan will be proactive, strategic, and provide a net-conservation (recovery) benefit to the panther.

iv. This Plan has been developed by FDOT as the action agency for surface transportation projects in cooperation and consultation with the USFWS and the FWC.

v. This Plan requires the adverse effects of FDOT actions to be addressed through Section 7(a)(2) consultation on a project-by-project basis.

vi. This Plan provides for conservation opportunities within areas affected by the action agency's authorities. Because 'one size does not fit all', creativity and flexibility are essential to successful implementation and adaptive management strategies of this Plan.

vii. Conservation measures in this Plan may be geared towards both the panther itself or ecosystems that support the species. This Plan may incorporate wholly or in part, as appropriate, the approved USFWS Recovery Plan for the Florida Panther.

viii. USFWS's primary role under section 7(a)(1) is to encourage and support FDOT in developing and implementing conservation measures as outlined in this Plan. The Service will also provide feedback and comment on measures and efficacy of implementation It is implicit that the USFWS will not ask FDOT to reach beyond their authorities so that each conservation measure will complement the action agency's existing statutory authorities consistent with their supplemental obligations under the Endangered Species Act.

ix. Successful implementation of this Plan requires developing and fostering relationships between USFWS, FWC, and FDOT through significant and sustained interagency communication, coordination, and cooperation. This includes recognizing action agency mandates and constraints, using action agency expertise, and focusing on areas of mutual benefit.

x. This Plan does not, and is not intended to, take the place of section 7(a)(2) consultations; however, it is intended to reduce conflict while complementing, streamlining, and facilitating section 7(a)(2) consultations.

Florida Panther Recovery Goals

The goal of the USFWS Florida Panther Recovery Plan is to achieve long-term viability of the panther to a point where it can be reclassified from endangered to threatened (downlisted), and then removed (delisted) from the Federal List of endangered and threatened species (USFWS 2008). An interim recovery goal has been established to assist in determining progress towards the ultimate goals of reclassification and delisting. This interim goal is to achieve and maintain a minimum of 80 individuals (adults and subadults) in each of two reintroduction areas with the historic range and to maintain, restore and expand the south/south-central Florida subpopulation (USFWS 2008).

FDOT Actions Supporting Recovery to Date

FDOT Actions Supporting Recovery to Date

For over two decades, FDOT has had a robust planning process in place for complex projects such as new alignments, bridge replacements, and capacity improvements, referred to as Efficient Transportation Decision Making (ETDM). The purpose of this process is to incorporate environmental considerations into transportation planning to inform project delivery. The ETDM process provides agencies and other stakeholders the opportunity for early input and consideration of the environment in transportation planning. Both the USFWS and FWC have dedicated Environmental Technical Advisory Team (ETAT) members that support the ETDM process and provide meaningful comments on transportation projects. Often, this process identifies wildlife crossing opportunities and will continue to be a robust tool to support this Plan. As projects screened in ETDM move into the PD&E Study phase (whether through the federal or state process), the ETAT members remain engaged and can continue to help FDOT identify opportunities to address adverse effects on the panther through ESA consultation. Conservation measures such as construction of crossings, or purchase of Panther Habitat Units (PHUs) mitigation credits are often identified as commitments during the PD&E phase and are carried out during the Design and Construction phases.

As discussed in the Introduction, FDOT began constructing wildlife crossings in the early 1990s. Since then, as both the panther and the human populations have grown, FDOT has demonstrated a strong track record of implementing mechanisms aimed to reduce WVCs statewide with the most significant efforts occurring within panther habitat. While many of these efforts have been the result of project consultation through section 7(a)(2), several of these actions have been implemented by FDOT to provide a conservation benefit outside of the consultation process. This section provides a summary of conservation measures implemented to date through consultation, pro-active opportunities, procedural actions, and outreach actions.

In recent years, FDOT has been proactive in looking beyond traditional transportation development projects to address WVCs or future range expansion by utilizing data (e.g., telemetry, hot spots, least cost pathways, conservation lands)

and collaboration with stakeholders to identify locations for wildlife crossings, fencing, or other solutions. These "retrofit" actions can be more challenging to implement and fund when they do not fall within the identified needs of the transportation work program. In some instances, FDOT has also been able to react quickly when a need to address WVCs becomes apparent late in the project production process by revising plans and adding funds. This is not the most effective approach, and it can be time-consuming to process the last-minute changes which include additional permitting and construction contract hurdles. This Plan aims to make proactive (or retrofit) projects easier to plan for and fund.

FDOT has a number of proactive conservation measures planned or envisioned within the next five years to address WVCs or range expansion, some of which are "retrofit" projects (***TABLE 1***). These projects are more fully described in **Appendix D**. It is the goal of this Plan to consider these locations along with other yet to be identified locations by using the prioritization methodology in **Appendix E**. Then FDOT would work to identify and schedule funding through the mechanisms described in the **Appendix F** in order to complete the environmental review, design, right of way acquisition, and construction of the conservation measures in a more predictable manner. See ***Partnerships/Use of Conservation Plan by Others*** for more details.

TABLE 1 PROACTIVE CONSERVATION MEASURES TO BE CONSTRUCTED AND PLANNED WITHIN NEXT FIVE YEARS

Timing	Financial # xxxxxx-x	County	Project Description	Addressing WVCs or Providing Range Expansion Opportunity	# of Panther collisions within 1 mile
Fully Funded	**436673-1** US 98 from Socrum Loop to CR 54	Polk	Construct a new wildlife crossing near Green Swamp East Tract and 5 smaller culvert crossings	Range Expansion	0
	434886-2 SR 700 (US 98) John Singletary Bridge replacement over Peace River	Polk	Re-construct a new bridge over the Peace River with wildlife shelves, more vertical clearance, and limited wildlife fencing	WVC and Range Expansion	1
	430848-1 SR 82 from Hendry C/L to Gator Slough Ln	Collier	Replace two bridges with new bridges with wildlife shelves, more vertical clearance, and wildlife fencing.	WVC	15
	452544-1 I-75 from Golden Gate to Corkscrew	Collier	Construct 2.7 miles of wildlife fencing on both sides of I-75 adjacent to the Larry Kiker Preserve	WVC	4
	425843-2 I-75 at SR 951	Collier	Construct 0.8 miles of wildlife fencing and noise walls on both sides of I-75 west of CR 951	WVC	3
	444008-2,-3,-4 I-75 Alley Pile Bridges	Collier	Construct pile bridges over canals at 6 locations	WVC	2
	448693-1 SR 29 Roadside Animal Detection System (RADS)	Collier	Construct Roadside Animal Detection System (RADS) - 1.6 miles	WVC	7
	201214-8 I-4 at Saddle Creek Overpass	Polk	Construct new wildlife crossing overpass over I-4 near Saddle Creek	Range Expansion	0
	430185-7 SR 33 at Saddle Creek Underpass	Polk	Construct new wildlife crossing underpass under SR 33 near Saddle Creek	Range Expansion	0
Within 5-years*	**417540-8** SR 29 at Owl's Hammock	Collier	Construct a new wildlife crossing near Owl's Hammock including crossing of the Barron Canal and wildlife fencing to funnel wildlife to the crossing.	WVC	10
	449143-1 SR 29 North of Panther Refuge	Collier	Construct a new wildlife crossing north of the Panther Refuge including crossing of the Barron Canal and wildlife fencing to funnel wildlife to the crossing.	WVC	10
	449144-2 US 27 Venus Wildlife Crossing	Highlands	Construct a new wildlife crossing along US 27 near Venus and wildlife fencing to funnel wildlife to the crossing.	WVC	1
	449149-1 SR 29 from SR 78 to CR 74	Glades	Raise profile of SR 29 to prevent roadway overtopping and incorporate wildlife crossing features by replacing at least two existing bridges (Chapparal Slough and Lone Pine Creek)	WVC	1
	## SR 80 at Roberts Canal	Hendry	Add wildlife shelves under existing SR 80 bridges over Roberts canal	WCC	3
	443122-1 SR 66 Highlands Hammock	Highlands	Construct a new bridge along SR 66 near Highlands Hammock to prevent roadway overtopping and incorporate wildlife crossing features (shelves) and wildlife fencing to funnel wildlife to the crossing.	WVC and Range Expansion	1

FDOT has been a leader in seeking innovative and cost-effective alternatives to traditional crossings as well as pushing the envelope of design. Examples include:

Wildlife Crossing Shelves

Incorporating wildlife shelves into both bridge replacements and retrofitting existing bridges has proven to be a cost efficient and effective tool for encouraging wildlife, including panthers, to use bridge crossings. FDOT has incorporated a variety of sizes, material types and construction methods to create these pathways for wildlife movement under bridges. A minimum 3’ wide shelf has proven to be sufficient for most wildlife including panthers. The elevation of the shelf should be set above the seasonal high-water elevation while also maximizing the vertical clearance (head room) under the bridge. The shelves should be designed to withstand short periods of inundation during large storm events. The shelves make it safer and easier for bridge inspectors and other FDOT contractors to access under the bridge, but also makes it more enticing for fisherman and the public. Wildlife fencing should be used to both funnel wildlife to crossing and discourage human use when possible.

SR 80 at Townsend Canal

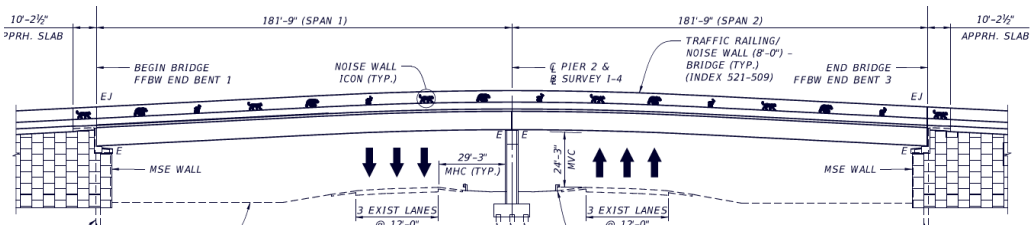
SR 80 at C-3 Canal

Timber and Concrete Pile Crossings

In the early 20th century miles of canals were dredged across South Florida to help drain the relatively flat terrain and make it more suitable for development. These canals unwittingly created a new obstacle for panthers to traverse. Some of these canals parallel existing roads including SR 29 and I-75 (Alligator Alley). For the design of the northernmost wildlife crossings adjacent to the National Panther Wildlife Refuge on SR 29 circa 2007 beam bridges were constructed over the Barron Canal to make it easier for wildlife including panthers to use the new wildlife crossings under SR 29. These canal "beam style" bridges, while proving effective for encouraging wildlife use, are expensive, so FDOT sought a more cost-effective alternative. FDOT selected a design using either timber or concrete piles which span the canals and allow wildlife to cross without having to swim the canals. FDOT is constructing new pile bridge crossings at five locations over the canals along Alligator Alley near existing box culverts. For the canal on the south side, FDOT will utilize four timber piles, similar to telephone poles, laid side by side and embedded in concrete on both ends to create a >4' wide bridge. On the north side, with the wider canal, two 30" concrete piles have been laid horizontally across the canal to create a 5' wide pathway for wildlife to utilize. The new less expensive pile bridges will be monitored to ensure they have a similar effectiveness as the older designs.

Wildlife Crossing Overpass

While wildlife overpasses have been used effectively in western states and Canada, Florida has not constructed a dedicated wildlife overpass to date. Currently there are two recreational overpasses (one over I-75 and one over I-95) that wildlife will use but was not the sole purpose for the structures. Below is an engineering drawing showing the current design for the I-4 at Saddle Creek overpass.



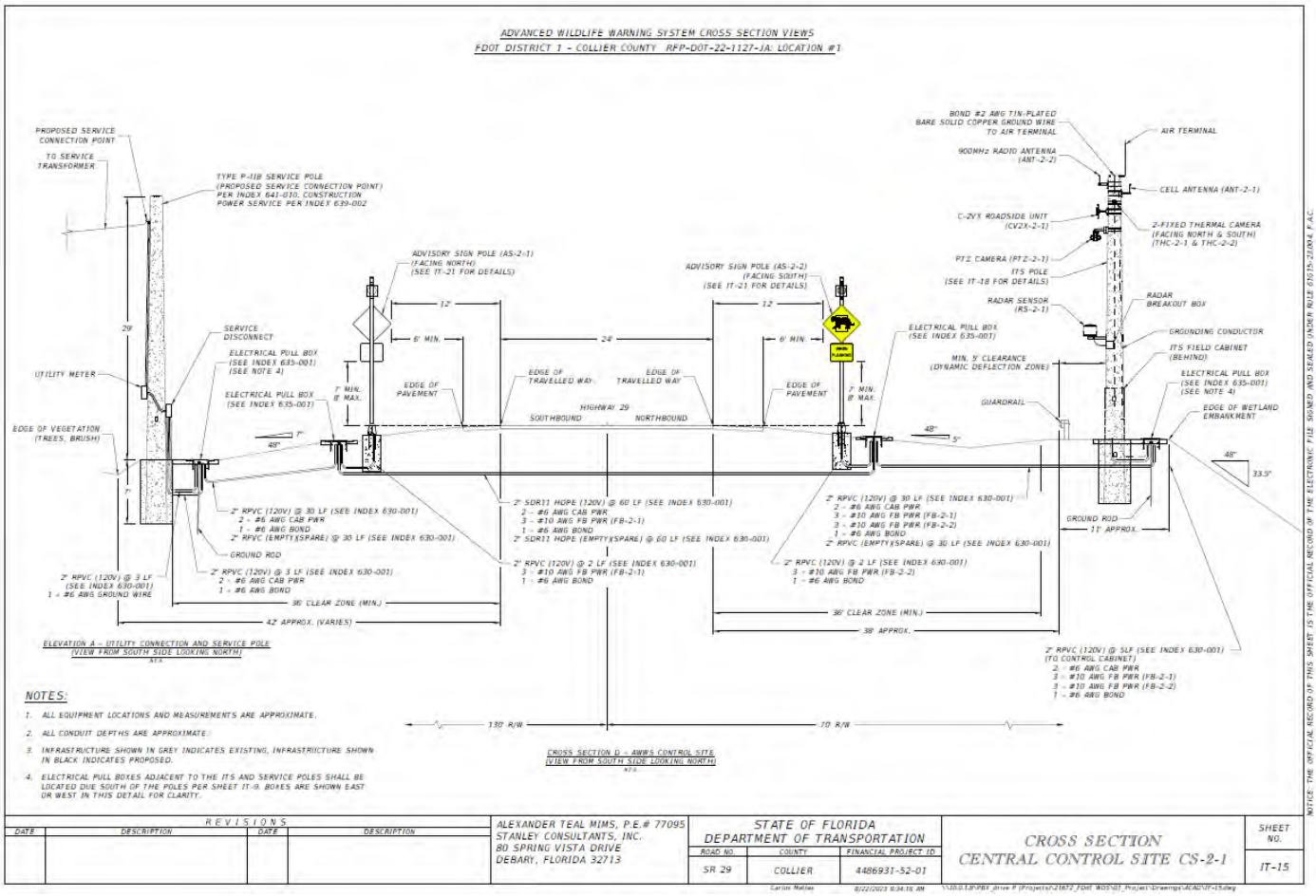
Wildlife Cameras, Photos, and Video Documentation

In the fall of 2015 FDOT purchased a motion activated trail camera for the specific purpose of monitoring wildlife using existing bridges and wildlife crossings. With initial success, FDOT purchased additional cameras which quickly became a data management problem. Additionally, FDOT wanted a way to easily share the wildlife crossing usage data with wildlife agencies, NGO's and the public. FDOT developed the ***FDOT Wildlife Bridge Crossings*** GIS website which shows the location of each of the bridges FDOT has monitored, provides wildlife related details of the bridge and a link to Google Photos showcasing the wildlife captured using each crossing. To date more than 150 bridges have been monitored and the site features more than 5,000 pictures and videos. The motion activated wildlife cameras also provide a means to verify anticipated wildlife in the area of a proposed crossing or retrofit. The camera footage adds another data source which when combined with telemetry, least coast pathways and vehicle collision data, can provide added justification to support a new crossing or retrofit.

Roadside Animal Detection System (RADS)

In 2011 FDOT constructed a Roadside Animal Detection System (RADS) along US 41 in Collier County near the Turner River for the purposes of testing alternative, less costly approaches to wildlife crossings specifically to address a panther-vehicle collision hotspot. The system utilized active infrared sensors which when the beam is broken, triggered signs to flash warning motorists to slow down. While statistically the RADS reduced panther vehicle collisions within the US 41 study corridor, it's unclear if the RADS was wholly responsible. Additionally, after installation several noteworthy issues were identified, namely vegetation and cars pulling off the roadway causing the beam to break and false triggers of the flashing signs. Theft and vandalism of the equipment was also a problem. Beginning in 2019 FDOT investigated several options to retrofit the existing system but ultimately decided to replace the system with static signs due to the outdated equipment and more importantly lack of PVCs due to panthers no longer using the areas south of US 41. When the Turner River bridge is replaced at some point in the future FDOT will incorporate wildlife shelves under the new raised/longer bridge.

A new RADS system will be constructed along a 1.6-mile segment of SR 29 near Owl Hammock in the fall of 2023. This system is a pilot project using radar and thermal imaging cameras. The system includes both signs and in-vehicle warnings. This pilot project along with another pilot project being developed outside the panther range using Intelligent Transportation System (ITS) cameras, are anticipated to inform FDOT and our partners how new technologies may be able to reduce WVCs.



Land Acquisition Supporting Crossings

FDOT has purchased approximately 1,692 acres of conservation lands for the Platt Branch Mitigation site in Highlands County, over 5 acres for wildlife fencing along SR 82 and intends to purchase more than 20 acres near the I-4 at Saddle Creek wildlife overpass crossing to support range expansion of the panther north of I-4.

FDOT Policy and Procedures Benefiting Florida Panthers

FDOT has undertaken many policy and procedure related actions over the years which benefit panthers and other wildlife. These actions have provided tools and direction to inform designers and engineers to improve wildlife connectivity. These actions have resulted in strong partnerships with key agency staff, NGO representatives, and other stakeholders which supports more informed decision making. These actions include:

- developing Wildlife Crossing Guidelines (initial version circa 2008, current version 2023) in coordination with the USFWS and FWC
- participating on the USFWS Florida Panther Recovery Implementation Team – Transportation Subteam for approximately 10 years
- developing and maintaining a “Wildlife Crossing Considerations” geodatabase for use in the Planning and Design phases of transportation projects (including identification of bridges that could serve as wildlife crossings with some modifications).
- providing guidance to roadway/structure designers to consider wildlife in infrastructure (Florida Design Manual, Structure Design Guide, Draft 2023 Florida Greenbook)

- provided numerous presentations at FDOT and other conferences to share FDOT expectations for wildlife crossings as well as innovative designs

FDOT has also participated in several educational or media related opportunities to bring attention to the panther and wildlife crossings. These types of actions help support USFWS public education and outreach goals. These actions include:

- Hosted multiple field trips to the crossing under construction at Interstate 4 (I-4) and CR 557
- Florida Wildlife Corridor Summit – September 2022/September 2023
- Council on Environmental Quality – Fall 2022
- Developing shared media content with USFWS showing a ***panther using the SR 29 Pistol Pond Wildlife Crossing***
- Florida Wildlife Corridor video on Chaz Bears: Finding Balance for Wildlife and Roadways in Florida's Nature Coast
- ***Need for Connectivity Movie***
- ***ABC News Story on I-4 wildlife crossing underpass near SR 557***
- ***Bay News 9 story on I-4 wildlife crossing underpass near SR 557***
- ***NPR Article Regarding Wildlife Crossings in District 1***
- ***Fox News Story on I-4 Overpass***
- ***ABC News Story on I-4 Overpass***
- Broketail video (***https://www.youtube.com/watch?v=j7yvqzeDDCU&t=3s***)

FDOT is proud of the many ways in which the agency has already supported recovery of the panther and will continue to explore these effective and innovative means of implementing conservation measures on the state highway system as well as through public outreach. Further discussion regarding anticipated conservation measures supporting this Plan can be found in the ***Conservation Measures*** section.

ENVIRONMENTAL SETTING

The environmental setting for this Plan is the state of Florida. This setting is indeed a very unique set of natural habitats, infrastructure, and human population. Juxtaposed with some of the wildest places, inhospitable mosquito habitats, and picturesque landscapes, are progressive, vibrant urban centers, productive farms, and industrial working environments.

Florida is a popular state. Florida is the fastest growing state according to the U.S. Census Bureau, with a current population estimated at 21.5 million people, the third most populous state in the United States. Florida is nicknamed the "Sunshine State" because of its warm climate and many days of sunshine. The combination of sunny climate, beaches, and growth of industry has attracted retirees and migrants from northern parts of the United States, international migrants, and vacationers since the Florida land boom of the 1920s.

A diverse population, urbanization, and a diverse economy has developed in Florida. The economy of Florida has shifted from early natural resource exploitation by logging, mining, fishing, and sponge diving, to cattle ranching, farming, and citrus production. Now, tourism, real estate, trade, banking, and retirement businesses have developed as economic drivers. Natural habitats have been altered significantly; the large-scale alteration of regional wetland areas, estuaries,

and bays — combined with increasing population pressures and changing land uses — has significantly degraded the natural systems on which Florida panthers depend. These are some of the many anthropogenic factors that may affect panthers as the need for long-term viability include habitat loss and fragmentation, mortality associated with vehicle collisions, human-panther conflicts, illegal shootings, infectious diseases, and an emerging neuromuscular disorder of unknown origin. Habitat loss in the form of agricultural conversion and urbanization associated with a continually increasing human population is a primary threat to the long-term viability of the panther population in South Florida and to the potential for population expansion north of the Caloosahatchee River.

What does the future hold? Despite the challenges facing the Florida panther, there is a broad coalition of conservation organizations, farmers and ranchers, and the general public, all committed to recovery of the Florida panther. The State of Florida is actively conserving lands for wildlife. Noteworthy partnerships, education, research, public outreach, and advocacy has increased a wider understanding and acceptance of Florida panthers and wildlife, as well as encouragement to share the landscape with these endangered predators.

AUTHORIZED PROJECTS/ACTIVITY TYPES/ DESCRIPTIONS

The actions covered by this Plan generally consist of all FDOT activities within the Florida Panther focus area and possible range expansion areas including maintenance of and improvements to existing SHS facilities, and construction of new SHS facilities. This Plan addresses all engineering (e.g. geotechnical investigations) and construction activities including but not limited to safety improvements, traffic improvements, new bridges, bridge replacements, drainage improvements including stormwater management facilities (e.g., ponds, floodplain compensation, ditches, swales, culverts), bike and pedestrian improvements (e.g., bike lanes, sidewalks), shared use paths, rest areas, weigh stations, visitor centers, toll facilities, wildlife crossings, ITS, landscaping, as well as maintenance needs for all existing and future surface transportation infrastructure, and any other activities deemed required by the FDOT as part of the normal operation of the SHS/improvements required to maintain the integrity of the roadway system for the traveling public.

FDOT has a robust project delivery process which includes six phases: Planning, Environment, Design, Right of Way, Construction, and Maintenance. Each phase is governed by various federal and state laws. FDOT also follows federal or nationally recognized guidance and requirements for surface transportation developed by FHWA and the American Association of State Highway and Transportation Officials (AASHTO). Functional areas (e.g., Structures Design, Maintenance) in each project delivery phase produce and actively update manuals, guidance, and criteria used to evaluate, design, construct, maintain, and otherwise make informed decisions regarding the SHS. Some of these documents/requirements are noted below and included in the reference section. Documents or requirements that are not specifically discussed or referenced throughout this Plan will still be applied as appropriate to project development, maintenance activities, and conservation measures implemented as a result of this Plan. In addition, new guidance or requirements may be developed over the course of implementation of this Plan and will be applied as necessary by FDOT. This Plan is intentionally flexible to accommodate these types of changes.

The activities or actions that FDOT undertakes can generally be categorized into two groups. The first group includes 26 routine projects and activities conducted by FDOT within existing right of way (ROW) that have predictable, repetitive outcomes, and which are addressed in the ***FDOT Programmatic Approach for Minor Transportation Activities*** (Minor Transportation Activities PA or PA). The PA sets consistent expectations statewide for these activities and any

conservation measures needed to avoid or minimize minor impacts to the panther. The second group are all other activities FDOT would undertake on the SHS. Both are described in more detail below.

Minor Transportation Activities

The 26 activities covered by the PA are grouped into three categories ("Installation of New Lighting" is not included here because it has an outcome of a "may affect" determination that requires consultation). Category A includes two "Activities with No Ground Disturbance". Category B includes 17 "Activities with Minimal Ground Disturbance", and Category C includes seven "Activities with Moderate Ground Disturbance or In-Water Work". See PA Section III Covered Activities and Table 1 of the PA for descriptions of the specific activities. Each activity has an associated effect determination of either "no effect" or "may affect", or 'not likely to adversely affect" (MANLAA). For those projects that result in a MANLAA determination, FDOT follows the conservation measures in the PA as applicable. For circumstances where the project requires additional right of way and/or FDOT cannot follow the conservation measures where applicable, FDOT will conduct Section 7(a)(2) consultation as described in the ***Effects Analysis of the FDOT Transportation Program*** section.

Other Activities FDOT Undertakes on SHS

As noted at the beginning of this section, there are many types of activities FDOT undertakes to maintain and improve the SHS. For purposes of this Plan, the following project types are described broadly to provide an indication of the activities associated with each. The project list and associated activities is not exhaustive, and any project or activity not specifically represented here would still be covered by this Plan. The project list also includes some activities covered in the PA for those instances where those projects would not qualify under that mechanism (e.g., minor amount of right of way needed to construct project). Many of the projects FDOT constructs would involve more than one of these project or activity types under one contract. For example, roadway segments that require resurfacing may also include filling sidewalk gaps, intersection improvements for safety, and improving drainage.

Safety Improvements

FDOT uses a series of federal and state guidelines to address roadway safety in the PD&E and Design phases of project development to provide appropriate safety countermeasures. There are a wide range of safety improvements FDOT undertakes. The top three emphasis areas of ***Florida's Strategic Highway Safety Plan*** include lane departures, intersections, and pedestrian and bicyclists. Each of these emphasis areas have FHWA "Proven Safety Engineering Countermeasures" associated with them.

Other areas of focus include interstate interchange safety, wrong way driving, lighting, and other crash countermeasures. FDOT considers crash history, uses field observations, and conducts Road Safety Audits to determine which countermeasures to propose for a given project location.

Most safety projects are addressed in the PA, but on occasion, those types of projects may be larger in scope and may not qualify under the PA.

Resurfacing, Restoration, and Rehabilitation (RRR)

Resurfacing, restoration, and rehabilitation (RRR) work is defined as work undertaken to extend the service life of an existing highway and enhance highway safety. This includes the placement of additional surface materials and other work necessary to return an existing roadway to a condition of structural and functional adequacy. RRR projects also consider safety, modifications to comply with then Americans with Disabilities Act (ADA), paved shoulders, improvements to roadside barriers and guardrail to meet minimum standards, improvements to bridge rails, and traffic signal mast arms within the mast arm policy area.

FDOT reviews pavement conditions through the Pavement Condition Survey (PCS) Unit's annual survey of the entire SHS in support of FDOT's Pavement Management program. The data collected (in terms of crack, ride, and rut measurements) is used to assess the condition and performance of the state's roadway network as well as to predict future rehabilitation needs. These predictions are used in the preparation of the legislative resurfacing budget request,

and subsequent distribution of funds to the FDOT Districts. Additional programs, including but not limited to, the federally mandated Highway Performance Monitoring System and project level evaluations are used to assess the ride quality of pavement surfaces for acceptance purposes.

Most RRR projects are addressed in the PA, but on occasion, those types of projects may be larger in scope and may not qualify under the PA.

Add Lanes and Reconstruction

A highway project along an existing facility may add lanes, widen or replace bridges, or improve intersections to improve capacity, safety, or operation. These projects have several "design controls" that the engineer establishes in the development of the construction plans. These include:

- Design speed
- Design vehicle
- Design period
- Traffic volumes
- Level of service
- Functional classification
- Context classification

Additional design controls include right of way constraints, utility conflicts, and preservation of larger trees. Design Exceptions or Design Variations are required when design controls and standards do not meet FDOT criteria.

Reconstruction projects typically include many the following activities:

- Demolition of existing buildings on newly acquired ROW
- Removal of existing pavement
- Earthwork (clearing and grubbing, embankment, excavation)
- New pavement
- Safety improvements
- Construction of drainage features (ponds, flood plain compensation, ditches, swales)
- Culvert extensions
- Bridge replacement/widening
- Sidewalks
- Shoulders
- Bike lanes
- Shared Use paths
- Lighting
- New signals
- ITS infrastructure
- Signing and pavement markings
- Maintenance of traffic (which can include temporary pavement and bridges)
- Noise walls
- Retaining walls
- Landscape and Hardscape

New Construction

A highway or bridge project may be along a new corridor on new horizontal and vertical alignments. The same design controls and activity types included in Add Lanes and Reconstruction projects are also used for new construction projects, with the exception that there is no existing road or bridge infrastructure to remove, replace, or upgrade.

Bridge Rehabilitation, Replacement, and Widening

According to the FHWA Bridge Maintenance reference Manual, “Most bridge repair needs are identified through a periodic bridge inspection program. Bridge inspectors provide detailed information and photographs of existing bridge conditions. The inspection report and bridge inventory data are the primary sources of information for an initial determination of the various maintenance and preservation needs of a bridge. When a bridge has been identified as needing work, more detailed information is gathered during a field visit by maintenance personnel.” FDOT uses a Bridge Management System to identify and prioritize needs with some maintenance activities being done on a fixed cycle. However, as noted by FHWA, “bridge needs can arise suddenly. Impacts to the superstructure by over-height vehicles, severe weather events, and punch-throughs of the deck are not uncommon and add to the workload” of the FDOT Structures Maintenance Office.

Bridge inspections can determine if a bridge may need to be considered for rehabilitation or replacement within specific parameters. The term "structurally deficient" means that the FDOT believes a bridge should undergo a series of repairs or replacement within the next six years. FDOT’s policy is to repair or replace structurally deficient state-owned bridges during that time. The term "functionally obsolete" only means that a bridge does not meet current road design standards. For example, some bridges are "functionally obsolete" because they were built at a time when lane widths were narrower than the current standard. Other considerations include the health index and sufficiency rating of a bridge.

Most bridge rehabilitation activities are addressed in the PA, but on occasion, projects may be larger in scope and may not qualify under the PA. Bridge replacement projects can be in-kind (as defined and covered in the PA), or they may be larger in scope such as when accommodating future capacity years in advance of an Add Lanes and Reconstruct project. Bridge widening projects are typically part of an Add Lanes and Reconstruction project or are done as part of a bridge replacement project.

Toll Facilities

Toll facilities generally consist of the following project types and associated activities; the Add Lanes and Reconstruct, New Construction, and Bridge Rehabilitation, Replacement, and Widening. In addition, toll facilities construct toll gantries which provide for the physical attachment for signage, tolling equipment, and other visual indicators. Toll operations may also require construction of buildings along the facility.

Shared Use Paths

Shared use paths are paved facilities physically separated from motorized vehicular traffic by an open space or barrier and are either within the road right of way or an independent right of way. The term, “shared use path”, as used herein is synonymous with trails, multiuse trails, or other similar terms. Some of the same activities in Add Lanes and Reconstruction projects are also used for shared use paths (e.g., earthwork, new pavement, drainage, culvert extensions).

Some shared use path projects can be addressed in the PA, but some may be larger in scope and may not qualify under the PA.

Rest Areas, Welcome Centers, Service Plazas, and Weigh Stations

FDOT operates 53 rest areas at 35 sites along Florida's interstate highways to provide safe, secure and comfortable rest stops for Florida travelers. Rest areas are generally located about 45 minutes traveling time apart from one another. Occasionally, FDOT constructs new facilities or reconstructs existing facilities. These facilities typically have both a building component, along with parking, picnicking/pet areas, and roadway facilities to transition off and on the SHS. In addition to vertical construction, several activity types included in Add Lanes and Reconstruction projects would be applicable to these types of facilities.

Landscaping

FDOT has a landscape policy by which the agency works to "conserve, protect, and enhance Florida's natural resources and scenic beauty when planning, constructing, and maintaining" the SHS. Planting designs can include protection of existing plant material, removal or relocation of plant material, or new plant material. Landscaping is often done as a standalone project after an Add Lanes and Reconstruct or New Construction project.

Most landscaping projects are addressed in the PA, but on occasion, those types of projects may act as a conservation measure.

Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) include the electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system. ITS devices are traffic control devices that feed traffic data to Transportation Management Centers. ITS infrastructure includes a host of different components, including but not limited to conduit, fiber optics, poles, interconnected traffic signal systems, closed-circuit TV cameras, overhead dynamic message signs, and control and power cabinets. ITS components can be included in Add Lanes and Reconstruct projects, New Construction projects, or may be standalone projects. Some activities in a standalone ITS project could include open trenching, jack and bore installations, erection of traffic signals and camera poles, and installation of cabinets and control systems.

Most ITS projects are addressed in the PA, but on occasion, those types of projects may act as a conservation measure.

Wildlife Crossings

As noted throughout, FDOT has implemented a wide range of wildlife crossings and associated features. FDOT Wildlife Crossing Guidelines state that wildlife crossings are designed based on site specific needs and constraints, but generally include one or more of the follow elements:

- new or modified structures (e.g., bridges, bridges with shelves, or wildlife overpasses)
- specially designed culverts
- directional or barrier fencing (with jump outs if appropriate), walls, or embankments

Maintenance

FDOT is responsible for providing routine and uniform maintenance of the SHS in a safe condition for the users and for protecting public investment in these facilities by preserving existing infrastructure. FDOT maintenance activities may be conducted by in-house forces, or performance-based asset maintenance contracts. Routine maintenance activities can generally be categorized as pavement maintenance, bridge maintenance, "traffic services" (e.g., lighting, signs), roadside maintenance (e.g., shoulders, sodding), drainage, vegetation and aesthetics.

Emergency Repairs

FDOT undertakes emergency repairs caused by natural disasters such as floods or hurricanes and as defined in either a Governor's proclamation or a President's declaration of emergency. The FDOT Environmental Review Guidance for Emergency Relief Projects explains that damage repair work eligible for **Emergency relief funds** under ***23 U.S.C. § 125*** includes: the repair, reconstruction, restoration, retrofitting, or replacement of any road, highway, bridge, tunnel, or transit facility (e.g., ferry dock, bus transfer station), including ancillary transportation facilities (e.g., pedestrian/bicycle paths, bike lanes), that are in operation or under construction when damaged. The action must occur within the existing right of way (ROW) and in a manner that substantially conforms to the preexisting design, function, and location as the original (which may include upgrades to meet existing codes and standards as well as upgrades warranted to address conditions that have changed since the original construction). These repairs are restoration in- kind to pre- disaster conditions.

FLORIDA PANTHER SPECIES ACCOUNT

Species Distribution

Puma (*Puma concolor*) have the largest geographic range of any terrestrial mammal in the Western Hemisphere, extending from western Canada southward through the western United States, Central and South America to southern Chile (Sunquist and Sunquist 2002, Nielsen et al. 2015). The Florida panther (*Puma concolor coryi*) currently exists as a single breeding population located in South Florida and represents the only known breeding population of puma east of the Mississippi River.

Life History

Puma social structure is polygamous in nature. Panther dens in South Florida have been detected in every month of the year, but most births occur from March through July (FWC 2019) with the probability of denning being higher during the dry season from December to May (Hostetler et al. 2012). Panther kittens remain in the den for up to eight weeks post-parturition (Maehr et al. 1989, van de Kerk et al. 2015). Females raising kittens at dens restrict their movements to a smaller area that gradually increases in size as the kittens get older (Maehr et al. 1989, Benson et al. 2008, van de Kerk et al. 2015).

Genetic management of the panther population, implemented via the release of Texas pumas into South Florida in 1995, improved survival of adult panthers and kittens (Benson et al. 2011, USFWS 2020). Panther kitten (0–1 years-of-age) survival is density-dependent with lower survival as population size increases (Hostetler et al. 2010). Survival rates are higher for female panthers than for males with subadult females exhibiting the highest annual survival (Benson et. al. 2011). Intraspecific aggression (i.e., panthers killing other panthers) is the most prevalent cause of mortality for radiocollared panthers >1 year-of-age, followed by unknown causes and vehicle strikes (Benson et al. 2011). Vehicle strikes have been responsible for 60 percent of the known panther deaths documented from 1972 to 2018, which includes the known deaths of both radiocollared and uncollared panthers (FWC 2019). Panthers that die as a result of a vehicle strike have a high probability of being reported by the public due to the high visibility of carcasses along roadways. This factor likely biases mortality data that includes uncollared panthers. Conversely, radiocollared panthers can be found wherever they die, thus removing said bias and potentially providing a better assessment of cause-specific mortality.

Panther dispersal patterns are similar to puma throughout their range. Young female panthers typically exhibit philopatry with most living adjacent to or within their mother's use areas; males disperse longer distances (Maehr et al. 20002). The longest recorded panther dispersal was approximately 805 km (500 mi) northward from the established panther population south of the Caloosahatchee River (FWC 2009). Panther dispersal is constrained geographically by human activities, fragmented habitat, the Caloosahatchee River, and the fact that the population exists on a peninsula.

Panthers occur at low densities, maintain large home ranges, and require large landscapes to meet their needs (Kautz et al. 2006, Onorato et al. 2010, Frakes et al. 2015). Adult male pumas are territorial and have home ranges that are larger than those of females and that overlap the home ranges of several adult females. The mean minimum convex polygon home range size based on data collected between 2004 and 2018 of adult male panthers was 428 km^2 and mean home range size of female panthers was 217 km^2 (USFWS 2020). Activity levels for panthers are greatest at night with peaks

around sunrise and after sunset (Onorato et al. 2011, Criffield et al. 2018); daytime hours are mostly dedicated to resting (van de Kerk et al. 2015).

Panthers are strict carnivores and prey mostly on white-tailed deer (*Odocoileus virginiana*), wild hogs (*Sus scrofa*), raccoons (*Procyon lotor*) and nine-banded armadillos (D*asypus novemcinctus*) in South Florida (Caudill et al. 2019, USFWS 2020). Panthers also prey upon livestock and pets, including calves (*Bos taurus*; Jacobs and Main 2015, Interagency Florida Panther Response Team 2017).

Habitat

Panthers in South Florida use an extensive mosaic of natural, semi-natural, and agricultural lands. They primarily select forested habitats, including pinelands, upland hardwood forests, hardwood swamps, and cypress swamps, that are used for daytime-rest sites, den sites, and cover for ambushing prey (Belden et al. 1988, Maehr and Caddick 1995, Cox et al. 2006, Kautz et al. 2006, Land et al. 2008, Onorato et al. 2011). Panthers in South Florida also select herbaceous- and shrub-dominated wetlands, prairie grasslands, and upland shrub lands, especially when they are near forested habitats (Onorato et al. 2011). Sites selected by female panthers for dens typically are in upland pine or hardwood habitats with extremely dense understory vegetation, such as saw palmetto (S*erenoa repens*) thickets (Benson et al. 2008).

Occurrence, Distribution, and Population

Panthers have been documented in 26 Florida counties based on verified occurrence records and a single dispersing male was killed by a hunter in Troup County, central Georgia, near the Alabama state line in 2008. Telemetry, mortality, depredation, human interaction, and sighting records indicate that panthers currently are distributed into Central Florida at least as far north as I-4, but most of these records are transient adult or subadult males that are not part of a breeding population. Within Florida, the furthest north a panther has been documented was an individual who was struck and killed by a vehicle on I-95 at the Flagler-St. Johns county line in northeast Florida in 2005. This animal and the Georgia mortality attest to the dispersal capabilities of panthers. They occasionally occur further north, but these are typically dispersing males from the breeding population in South Florida. Female panthers have been documented in eight Florida counties since 1973. From 1980 through October 2016, all occurrence data indicated that female panthers were present only south of the Caloosahatchee River and most reproduction occurred in Collier, Hendry, Lee, and Miami-Dade counties. In November 2016, an adult female panther was documented on the Babcock Ranch Preserve in Charlotte County (FWC 2017), the first time since 1973 that a female panther has been confirmed north of the Caloosahatchee River. A minimum of four adult female panthers and at least four litters of kittens have been documented north of the Caloosahatchee River between November 2016 and June 2020 (Kelly and Onorato 2020, FWC Unpublished Data).

The estimated census population size of panthers may have been as low as six individuals for two bottleneck generations in the late-1960s based on genetic analyses (Culver et al. 2008), and as low as ten individuals in 1974 based on field surveys (Nowak and McBride 1975). The minimum panther population size was 20–30 animals in the 1970s through the early 1990s but has been increasing steadily since the introduction of 8 female pumas from Texas into South Florida in 1995. This successful management action restored the genetic health of a panther population suffering the effects of inbreeding depression and described as being on the brink of extinction (FWC and USFWS 2017). The size of the panther population in areas south of the Caloosahatchee River identified as suitable habitat was reported to be 120–230 adults and subadults in 2015 (FWC and USFWS 2017). A scientific estimate of population size based on highway mortality of radio-collared panthers indicated that the population may have been as large as 414 panthers in 2017, but the estimate had a wide margin of error (i.e., 222–773) (McClintock et al. 2015, Onorato and McClintock unpublished data). Abundance estimates suggest that the increase in the panther population has been stabilizing since 2012, especially for the adult male panther population (McClintock et al. 2015). Population

density estimates over time have been as low as 0.91/100 km^2 (Maehr et al. 1991), but the increasing size of the panther population post-genetic introgression has resulted in higher densities of independent-aged panthers in the range of 1.37–4.03/100 km^2 in occupied high-quality habitats on public and private lands (Sollmann et al. 2013, Dorazio and Onorato 2018, Onorato et al. 2020). These estimates of panther densities are within the range of reported densities from other geographical areas within the range of pumas (Sollmann et al. 2013).

Recovery Status

Although the population objectives outlined in the 2008 Florida Panther Recovery Plan have yet to be reached, part of the recovery strategy to restore and expand the population in South Florida has been successful. The current panther population, at least 5-fold larger in size when compared to the population 3 decades ago, has greater resiliency today than it has exhibited for likely well over 100 years. Whereas the panther population in South Florida is noted as being viable for the next 100 years under current conditions, the impact of genetic erosion substantially reduces viability if genetic introgression is not implemented on a periodic basis (Hostetler et al. 2013, van de Kerk et al. 2019).

EFFECTS ANALYSIS OF THE FDOT TRANSPORTATION PROGRAM

Factors Affecting Species

Habitat loss in the form of agricultural conversion and urbanization associated with a continually increasing human population is a primary threat to the long-term viability of the panther population in South Florida and to the potential for population expansion north of the Caloosahatchee River (Maehr 1992, USFWS 2008, Onorato et al. 2010, van de Kerk et al. 2019). The genetic consequences of small populations have the potential to adversely affect panther populations and likely will require management in the form of future introductions of new genetic material into the Florida population (van de Kerk et al. 2019). Vehicle collisions are a significant source of anthropogenic mortality and may directly impact the panther population through reduction in panther numbers, thereby limiting the potential for population expansion (Onorato et al. 2010, FWC 2019). Several infectious disease agents (e.g., Pseudorabies Virus, Feline Leukemia Virus) have proven to kill panthers, and the risk of outbreak from these or other novel infectious agents remains a threat to the health and recovery of the population. A neuromuscular disorder of unknown cause, termed Feline Leukomyelopathy (FLM), has recently been detected in panthers and bobcats in the State of Florida and may present a threat to the natural expansion of the panther population (FWC 2020).

Effects of the FDOT Transportation Program

As noted throughout this Plan, both the human population and the panther population have seen increases since the turn of the century. In the last decade, Florida has become the 3rd most populous state and is now the fastest growing state as of December 2022 (US Census Bureau). With this growth has come increased threats to the panther from WVCs as development adds to the traffic volumes on the SHS. However, continuing to preserve the quality of our environment

while meeting the transportation needs for both a growing population and a growing economy is the mission of FDOT. Transportation actions can and have been providing effective strategies to minimize WVCs, as well as supporting range expansion opportunities for the panther population.

The ***Authorized Projects/Activity Types/*** Descriptions section describes many of the project types FDOT undertakes to maintain and improve the SHS and these are described broadly to provide an indication of the activities associated with each. And as noted previously, many of the projects FDOT constructs could involve more than one of these projects or activity types under one contract. While it is difficult to make effect determinations for individual transportation projects without knowing the specific design details, this section will describe the generally anticipated effect determinations based on the project location and typically expected actions associated with the project type. Final effect determinations will be made through the Section 7(a)(2) consultation process either through the Minor Transportation Activities PA, or through the Section 7(a)(2) Consultation Form included in **Appendix B**. The Section 7(a)(2) Consultation Form will also be used by FDOT for technical assistance and those results would be provided to the permitting agencies to rely on during their reviews. Other than those projects covered by the PA, the effect determinations outlined herein are preliminary only and should not be construed by FDOT or the USFWS as final effect determinations until the project specific details have been considered by both entities. Projects are grouped into the following categories:

GROUP 1

Projects that qualify for the Minor Transportation Activities PA (Categories A, B, C)

Category A: Activities with No Ground Disturbance
Category B: Activities with Minimal Ground Disturbance
Category C: Activities with Moderate Ground Disturbance or In-Water Work

There are 26 activities covered by the PA (see Section III. Covered Activities and Table 1 of the PA) that result in either "no effect" or "may affect, not likely to adversely affect" (MANLAA) determinations. For those projects that result in a MANLAA determination, FDOT follows the conservation measures in the PA as applicable. For projects where the PA can be applied and applicable conservation measures can be followed, no further consultation for these activities is required. FDOT will document and report the use of this PA as required in sections ***Conservation Measures*** and ***Partnerships/Use of Conservation Plan by Others*** of the PA.

GROUP 2

Projects with activities in Category A or B of the PA but require minor amounts of right of way and for which the PA conservation measures are still appropriate

Many times, the types of actions described in the PA will require minor amounts of right of way either in fee, or for temporary access to accomplish the construction. These project types can include safety, RRR, bridge rehabilitation, in-kind bridge replacement, shared use paths landscaping, ITS, and maintenance. Some of these situations include:

- Corner clips (e.g., at intersections where a new mast arm signal foundation requires additional area)
- Small right of way strip (e.g., a few feet of additional area is needed to add or extend a turn lane for an intersection improvement)
- Temporary construction easement (TCE) (e.g., the contractor will need additional space during construction to build the facility, but that will not become part of the final transportation facility and is typically returned to the original or better condition).
- Right of entry (e.g., similar to TCE)
- License agreement – revokable permission to access adjacent property to improve harmonization for the benefit of the adjacent property owner.

If the land cover type for these minor right of way needs is either Urban or Water as defined in the USFWS Panther Habitat Assessment Methodology (September 2012), which are assigned a value of 0, then these projects can apply the appropriate effect determination in the PA as long as the applicable conservation measures are followed.

GROUP 3

Projects with activities in Category A or B of the PA that do not fit in Group 2, and Projects with activities in Category C of the PA that require right of way or reach a MA determination when using the PA

These project types would be the same as those in Group 1 or 2 but require more right of way. However, this group is still generally not expected to have significant impacts and are considered activities to maintain (repair, replacement, or preventative actions to maintain or restore existing infrastructure in order to retain existing conditions and functionality of the transportation system) or modernize (enhance the existing transportation system, primarily to correct for substandard conditions for the safety of its users) the transportation system.

1) For these projects, FDOT will first apply the USACE Florida Panther Effect Determination Key (February 19, 2007).
    a. For projects that reach a "no effect" determination through the key, no further consultation will be required.
    b. For projects that reach a "may affect" determination FDOT will evaluate habitat impacts and documented panther occurrences as follows:
        i. FDOT will purchase the appropriate PHUs based on the USFWS Panther Habitat Assessment Methodology (September 2012), except for retrofit projects in which case FDOT may use the methodology in **Appendix G** address any PHUs that may be required.
        ii. Where there is a documented panther occurrence within a two-mile radius of the project limits within the last two years FDOT will evaluate implementing the following conservation measures as applicable and appropriate for the project conditions.
            1. ROW fencing (to reduce potential for WVCs).
            2. Riprap Modifications under bridges to support incorporation of wildlife shelves.
            3. Culvert upgrades or new culverts intended to reduce WVCs.
            4. Application of other conservation measures outlined in this Plan.
        iii. The final effect determination will be based on the use of the Section 7(a)(2) Consultation Form (**Appendix B**) and the conservation measures that can be provided by the project.

GROUP 4

Projects not covered by the PA outside the Panther focal area

This group includes projects such as Add Lanes and Reconstruct, New Construction, Bridge Widening, Rest Areas/Welcome Centers/Service Plazas/Weigh Stations, and retro fit Wildlife Crossings. When these project types are outside of the panther focus area, no habitat impact offsets through purchase of PHUs is anticipated, but there may be an opportunity for FDOT to provide conservation measures that reduce WVCs (current or future anticipated) or that support range expansion. FDOT will take into account documented panther vehicle hot spots (e.g., most

recent version of the Southwest Florida Roads Hot Spots GIS data layer) within the project limits and will evaluate implementing conservation measures outlined in this Plan as applicable and appropriate for the project conditions.

1) For projects with documented panther occurrences related to vehicle mortality, it is anticipated that these projects would generally result in a "may affect, likely to adversely affect" determination and conservation measures would be documented in the Section 7(a)(2) Consultation Form.
2) For projects with documented panther occurrences, but none related to vehicle mortality it is anticipated these projects would generally result in a "may affect, not likely to adversely affect" and conservation measures (if any) would be documented in the Section 7(a)(2) Consultation Form.
3) For projects with no documented panther occurrences, it is anticipated these projects would result either in a "no effect" or in a "may affect, not likely to adversely affect" when there are beneficial effects from implementing proactive conservation measures. Either scenario would be documented in the Section 7(a)(2) Consultation Form.

GROUP 5

Projects not covered by the PA inside the panther focal area

This group includes the same project types as those in Group 4 but occur in the panther focus area. Both habitat and the potential for direct impacts to panthers will be addressed through conservation measures for these projects using conservation measures outlined in this Plan as appropriate and applicable to the project conditions.

1) For projects in the focus area that do not fragment existing habitat and that do not have documented vehicle mortality, FDOT will offset habitat impacts with the purchase of appropriate PHUs based on the USFWS Panther Habitat Assessment Methodology (September 2012), except for retrofit projects in which case FDOT may use the methodology in **Appendix G** to address any PHUs that may be required. FDOT will evaluate implementing conservation measures that could reduce the potential for future WVCs outlined in this Plan as applicable and appropriate for the project conditions. It is anticipated that these projects would generally result in "may affect, not likely to adversely affect" determinations. Results will be documented in the Section 7(a)(2) Consultation Form.
2) For projects in the focus area that do not fragment existing habitat but that do have documented vehicle mortality, FDOT will offset habitat impacts with the purchase of appropriate PHUs based on the USFWS Panther Habitat Assessment Methodology (September 2012). FDOT will evaluate implementing conservation measures that would reduce the WVCs outlined in this Plan as applicable and appropriate for the project conditions. It is anticipated that these projects would generally result in "may affect, likely to adversely affect" determinations. Results will be documented in the Section 7(a)(2) Consultation Form.
3) For projects in the focus area that do fragment existing habitat, regardless of documented vehicle mortality, FDOT will offset habitat impacts with the purchase of appropriate PHUs based on the USFWS Panther Habitat Assessment Methodology (September 2012). FDOT will evaluate implementing conservation measures that would reduce the WVCs (current or future anticipated) outlined in this Plan as applicable and appropriate for the project conditions. It is anticipated that these projects would generally result in "may affect, likely to adversely affect" determinations. Results will be documented in the Section 7(a)(2) Consultation Form.

Avoidance and Minimization Components

As required by NEPA and the ESA, FDOT strives to first avoid and then minimize impacts that result from construction of transportation projects before mitigating unavoidable impacts. Due to the linear nature of surface transportation, application of these concepts can be challenging, especially for existing alignments. However, FDOT does generally look at multiple build alternatives (as well as the no build alternative) for projects that have a PD&E phase to consider a wide range of resources and to develop a preferred alternative that reduces overall impacts, including those to panthers and their habitat.

FDOT will continue to apply avoidance and minimization measures during project development such as widening to the inside or finding a "best fit" alternative when possible. Additional avoidance and minimization measures include siting stormwater ponds which avoids preferred panther habitat and cutoff lighting which minimizes off-site light pollution.

When there are unavoidable adverse effects after applying these measures, FDOT will then use the conservation measures described in the ***Conservation Measures*** section as applicable and appropriate to a given project location, to offset these impacts. FDOT will also continue to implement program-related conservation measures that will support both transportation decision-making and panther recovery goals.

CONSERVATION MEASURES

The following conservation measures may be used to support the transportation program while meeting specific USFWS recovery actions for the panther. Each conservation measure has identified actions associated with it. FDOT has been undertaking many of these actions over the years (indicated with an *), while others are conservation measures or actions that FDOT, USFWS, and FWC agree will likely also further panther conservation and recovery goals.

Conservation measures outlined within this Plan serve as a guide for meeting the goals and objectives of the program and do not obligate any party, including the action agency, to undertake specific actions at specific times. Rather, implementation of these conservation measures is contingent upon opportunities within the annual work program budget and/or other budgetary constraints.

Actions undertaken by FDOT to support specific conservation measures will be reported to USFWS and FWC annually. If additional conservation measures are identified that would support panther conservation and recovery goals through FDOT's transportation program, this Plan can be updated to reflect them.

If conservation measures are not performing as well as expected, FDOT, USFWS, and FWC will evaluate adaptive management strategies as situations arise at locations that may need additional attention or that warrant further consideration. Adaptive management will specifically be considered during the annual **Wildlife Crossings Prioritization Methodology** updates and meetings as described in **Appendix E**.

Recovery Objectives 1 and 2

Recovery Objective 1: To maintain, restore, and expand the panther population and its habitat in south Florida and expand the breeding portion of the population in south Florida to areas north of the Caloosahatchee River

Recovery Objective 2: To identify, secure, maintain, and restore panther habitat in potential reintroduction areas within the historic range, and to establish viable populations of the panther outside south and south-central Florida.

The following conservation measures and actions are intended to support Recovery Objectives 1 and 2:

Conservation Measures Supporting Recovery Objectives 1 and 2

Conservation Measure 1. Tools and Procedures to Support Wildlife Crossings

FDOT will continue to develop and update tools and procedures for use by environmental and design staff for transportation projects including wildlife crossings. Throughout this section, the use of the term "wildlife crossing" will also include other WVC reduction infrastructure and technology (e.g., fencing, road-side animal detection systems).

Actions

1.1. Wildlife Crossing Guidelines* – FDOT will continue to work with USFWS, FWC, and other stakeholders to maintain up to date guidelines.

1.2. FDOT Design Manuals* – FDOT will continue to review and update manuals such as the FDOT Design Manual and Structures Design Guide for opportunities to include guidance to designers as it relates to incorporating wildlife crossings into designs.

1.3. Wildlife Crossing Considerations Geodatabase* – FDOT will continue to maintain, develop, and collect GIS data best suited to support determining the most effective locations for wildlife crossings. Currently there are data layers related to WVCs, hot spot modeling, and conservation lands, to name a few. These data layers include panther specific information developed by the Panther Recovery Implementation Team (PRIT) – Transportation Sub Team such as:

- Least Cost Pathways
- 2022 Southwest Florida Roads Hot Spots
- I-4 Permeability locations

1.4. Wildlife Crossing Prioritization Methodology – FDOT will utilize and update the methodology annually in coordination with USFWS and FWC to identify and prioritize locations that can most likely reduce wildlife mortality, improve traffic safety, and support range expansion of the species, taking into consideration priority land acquisitions and anticipated land use conversions. See **Appendix E** for additional information.

Conservation Measure 2. Support Panther Related Research

FDOT will continue to look for opportunities that support panther related research. FDOT has previously supported universities through state-wide contracts to model WVC hot spots, has conducted a substantial amount of camera trapping for locations on the SHS, and has partnered with other organizations to conduct camera trapping that can inform wildlife crossing locations. This is an important conservation measure to understand the most up to date biological information and technological advances that support USFWS recovery goals.

Actions

2.1. Wildlife cameras* – FDOT will continue to look for opportunities to deploy cameras, or partner with other entities to provide camera trap data to inform wildlife crossing location decision making, implementation of other conservation measures, or adaptive management strategies.

2.2. University contracts* – FDOT will continue to look for opportunities to work with universities supporting panther research, wildlife crossing analysis, GIS data development, and other areas of subject matter expertise. The contracts may provide opportunities for funding additional collection of telemetry data.

2.3. Fund USFWS Positions* - FDOT, in coordination with FHWA, will continue to fund USFWS staff that can provide expertise on where and how to implement the conservation measures outlined in this Plan. FDOT will seek avenues (including through the existing FHWA agreements) to fund additional USFWS staff as needed to support new functions of this Plan such as USFWS liaisons with local road departments, private landowners, and other agencies supporting this

Plan. These current and future staff would also provide additional expertise to FDOT on design of conservation measures such as size and type of crossing, fencing innovations, median funneling techniques, and monitoring support.

2.4. USFWS Director Fellowship Program (DFP) – this program may offer FDOT an opportunity to support a project or internship that meets panther research or recovery objectives such as providing opportunities for funding additional collection of telemetry data.

2.5. Fund USFWS or FWC Research – as research needs are identified by USFWS or FWC to support this Plan and panther recovery objectives, FDOT will consider participating in funding these projects. Specifically, projects that provide data to support decision-making (e.g., additional GPS collars on panthers or surrogate species) would be of value to this Plan. Other topics such as studies on predator-prey relationships may also provide pertinent information.

Conservation Measure 3. Construct, Maintain, and Monitor Wildlife Crossings

As noted throughout, FDOT has been constructing wildlife crossings to support the panther for over three decades and currently there are 85 in the panther focus area. Through photo documentation over the last eight years, FDOT has demonstrated the effectiveness of these structures to support a reduction in WVCs, as well as providing habitat connectivity. Construction of wildlife crossings (both project related, and stand-alone retrofit opportunities) will be a focus of this Plan. Throughout this section, the use of the term "wildlife crossing" will also include other WVC reduction infrastructure and technology (e.g., fencing, road-side animal detection systems).

Actions

3.1. Construct Wildlife Crossings* – FDOT will construct wildlife crossings that are funded as a result of utilizing the methodology in **Appendix E**. FDOT will continue to seek out innovative and cost-effective solutions for this action. When designing and permitting retrofit crossings that have impacts to panther habitat, FDOT may utilize the methodology outlined in **Appendix G** to address any PHUs required.

3.2. Improve Maintenance of Wildlife Crossings – FDOT will evaluate ways to implement specific maintenance activities for existing crossings where issues arise and incorporate those that come on-line in the future to enhance effectiveness of the crossings. This could include removal of exotic or invasive vegetation, removing trash, ensuring appropriate elevations are retained, or reviewing adjacent impediments.

3.3. Monitoring Wildlife Crossing* – FDOT will work with USFWS and FWC to develop monitoring plans for wildlife crossings through the Wildlife Crossings Prioritization Methodology process outlined in **Appendix E**.

Conservation Measure 4. Conservation Land

Panthers have large home ranges and can travel long distances. Panthers also need additional land for dispersing northward and expanding their range. Effective wildlife crossings require adequate amounts of conservation lands or appropriate habitat to support both the biological functions of the panther, but also the recovery goals of the USFWS.

Actions

4.1. Conservation Land Funding* – FDOT will evaluate funding or purchase of conservation lands (e.g., in fee, via easement, or for transfer to land management entity) in support of wildlife crossings, land in dispersal zones, or other lands identified as important to panthers may be considered. Support of FWC Non-traditional Section 6 Land Acquisition Grants, or the FWC Florida Panther Payment for Ecosystem Services (PES) Program may also support this conservation measure.

4.2. Conservation Land Maintenance – FDOT will evaluate addressing unmet maintenance needs to achieve management objectives (e.g., short sections of lime rock road installation, culvert installation or repair) on public lands may be considered as a conservation measure when support is provided by the FDOT (e.g., through Office of Maintenance).

Conservation Measure 5. Training, Conferences, Technical Support

FDOT will continue to share innovations, project successes, and lessons learned through internal and external training opportunities and conferences attended by the engineering and environmental consulting communities as well as with agency and NGO partners. FDOT has regularly provided presentations on wildlife crossings to these groups including most recently at the Florida Transportation Symposium, Florida Wildlife Corridor Summit, and FWC training events. As time allows, FDOT staff can also provide technical support or engineering assistance to local transportation organizations that may be interested in guidance on planning, designing, or constructing wildlife crossings.

Actions

5.1. Provide Training and hold Statewide Meetings* – FDOT will continue to provide opportunities for training regarding engineering, environmental considerations, siting, challenges, and lessons learned from wildlife crossing implementation or other panther related conservation measures. FDOT has been hosting a Florida Transportation Symposium for several years where the topic of wildlife crossings has been presented. FDOT participates in AASHTO committees where other state DOTs learn and share from each other at regular meetings and nationwide annual meetings. FDOT also hosts quarterly Protected Species and Habitat meetings as well as other statewide meetings that may be opportunities for information sharing. FDOT holds occasional training opportunities for Environmental Technical Advisory Team members which could be an avenue for sharing best practices.

5.2. Attend Conferences* – FDOT will continue to attend conferences and workshops which further knowledge transfer, collaboration, partnerships, and innovation. These may be conferences such as the International Conference on Ecology and Transportation (ICOET), Florida Chamber of Commerce Environmental Permitting Summer School, Florida Association of Environmental Professionals, FDEP Public Land Acquisition and Management (PLAM), FWC Landscape Summit, Florida Wildlife Corridor Summit, or other similar events.

5.3. Provide Technical Support* - As availability allows, FDOT may be able to provide technical support to local transportation organizations, developers, or other entities. This support may be in the form of presentations at MPO meetings, information sharing regarding gaps in habitat connectivity (e.g., priority wildlife crossing locations that are not fully funded, potential off-system wildlife crossing locations, land acquisition gaps), engineering assistance, or guidance and examples regarding implementing specific conservation measures.

Conservation Measure 6. WVCs and Driver Behavior

FDOT will look for opportunities to implement tools that may positively influence driver behavior, either short or long term, on the SHS where WVCs are of concern.

Actions

6.1. Implement Tools to Positively Influence Driver Behavior* – These tools could include coordination with state or local law enforcement to use temporary radar speed feedback signs, night-time speed zones, funding speed enforcement zones, clearing vegetation for improved sight distance. Other public outreach activities that may also positively influence driver behavior are included in conservation measures associated with Recovery Object #3.

Conservation Measure 7. Panther Behavior/Prey Availability

FDOT may consider innovative approaches that support both panther prey availability as well as addressing panther depredation situations in coordination with on-going efforts by other entities. Actions like these could be considered in situations where conservation easements to connect wildlife corridors or wildlife crossings would benefit from additional assistance or where sufficient access to prey is of concern.

Actions

7.1. Contribute to Calf Depredation Programs – The US Department of Agriculture (USDA) has a Farm Services Administration Livestock Indemnity Program. The FWC is launching its Panther Depredation Compensation Program for commercial cattle operations in early Fall 2023, and NGOs may also support similar programs.

7.2. Contribute to established python monitoring/eradication or bounty programs that have demonstrated significant effectiveness in removing pythons from southwest Florida. Removal of pythons will help alleviate the pressure pythons put on the meso-mammal community, which provide important panther prey species.

Recovery Objective 3

The following conservation measures and actions are intended to support **Recovery Object 3**: **Public Awareness and Education**.

Conservation Measures Supporting Recovery Objective 3

Conservation Measure 8. Owned Media Opportunities

FDOT will continue look for opportunities to develop owned media that supports messages intended to positively influence driver behavior, spread the word about conservation measures implemented on the SHS, and provide other educational and outreach actions. Messages will be coordinated with the USFWS, FWC, and other appropriate internal offices.

Actions

8.1. Social Media* - FDOT will continue to highlight major milestones or completion of wildlife crossings via social media. FDOT will look for opportunities regarding other significant achievements or public messages to share on these platforms.

8.2. Printed materials* - FDOT will print materials (e.g., rack cards, door hangers, bumper stickers) that contain safety or educational information as opportunities arise.

8.3. On-line Content* - FDOT will continue to highlight major milestones or completion of wildlife crossings via on-line platforms such as the FDOT YouTube Channel and District or OEM websites. FDOT will look for opportunities regarding other significant achievements or public messages to share on these platforms.

8.4. Rest Areas, Welcome Centers, Service Plazas, and Weigh Stations – FDOT will evaluate media on monitors, scrolling story boards, posters, literature, and permanent signs at these facilities throughout the state as outreach and education opportunities arise.

8.5. Intelligent Transportation System (ITS) – FDOT will display occasional messages on ITS signs to provide pertinent messages to drivers traveling through targeted areas of the state.

8.7. Participate in Outreach Campaigns – FDOT will look for opportunities to participate in education and outreach campaigns hosted by others (e.g., Naples Zoo Florida Panther Festival, Zoo Tampa) where FDOT can provide volunteers, subject matter experts, or education materials.

Conservation Measure 9. Shared Media Opportunities

FDOT will coordinate with USFWS, FWC, NGOs, Locals, or other entities to find shared media opportunities. Like owned media actions, the shared media actions would be intended to positively influence driver behavior, spread the word about conservation measures implemented on the SHS, and provide other educational and outreach actions.

Actions

9.1. Joint Social Media Posts* – FDOT will continue to develop social media posts highlighting major milestones or completion of wildlife crossings, and other significant achievements or public messages to share through this avenue.

9.2. Technology to reach specific drivers – FDOT will evaluate technology such as geofencing to reach drivers on certain stretches of roadways to send targeted educational or safety messages. FDOT can do this through the Florida 511 Travel Information System, or by partnering with other similar traffic information platforms.

9.3. Educational Opportunities – FDOT will consider partnering with schools, driver education programs, or insurance companies to share educational and safety information.

9.4. Supporting ways to connect people and communities to public lands – FDOT will consider actions such as kiosks at conservation lands trail heads describing the importance of wildlife crossings.

Conservation Measure 10. Earned Media Opportunities

FDOT will continue look for opportunities for earned media that spread the word about conservation measures implemented on the SHS and provide other educational and outreach actions.

Actions

10.1. Press Releases* – FDOT will continue to develop press releases highlighting major milestones, completion of wildlife crossings and other significant achievements or public messages through this avenue.

10.2. Interviews* - FDOT will continue to provide the media with access to staff for interviews with subject matter experts seeking positive stories regarding recovery of the panther, infrastructure projects supporting the panther, or other conservation measures being implemented by this Plan.

Conservation Measure 11. Paid Media Opportunities

FDOT will consider opportunities for paid media actions that also support FDOT's goals for Target Zero or other safety related initiatives.

Actions

11.1. Paid Media – FDOT will consider opportunities such as billboards or specific campaigns (e.g., Motorcycle Safety Awareness Month).

PARTNERSHIPS/USE OF CONSERVATION PLAN BY OTHERS

FDOT, USFWS, and FWC welcome and encourage additional partners whose goals align with supporting recovery of the panther. Specifically, federal and state regulatory agencies may find that this Plan allows for more efficient or consistent environmental permitting outcomes for other permittees. Local transportation authorities may benefit from applying conservation measures in this Plan to off-system roadways. And private development entities may be willing to partner with FDOT on strategies that both promote their projects while supporting conservation measures being implemented timelier. The following sections describe how these additional partners are envisioned to participate, although local or private entities may find other innovative approaches that work just as effectively.

Federal and State Permitting Agencies – USACE, USCG, FDEP, FWC

As noted in the Introduction, FDOT acts as the lead agency for federal projects on the SHS through the NEPA Assignment Program. In February of 2019, FDOT, USFWS, USACE, and USCG codified the process by which FDOT would either consult with or seek technical assistance from the USFWS through the ESA depending on whether a project was considered a federal or state action (see **Appendix A**). FDOT will continue to adhere to this process for projects that require consultation for the panther. In general, FDOT will be the lead agency and conduct ESA consultation for federal projects.

For state projects requiring ESA consultation as a result of federal permitting, FDOT will obtain technical assistance from the USFWS as part of the PD&E Study or Design ahead of permitting.

Regardless of whether a project is considered a federal or state action, FDOT, USFWS, and FWC will use the ***FDOT Programmatic Approach for Minor Transportation Activities*** or the Section 7(a)(2) process outlined in **Appendix B** to determine if the project either has "no effect" or to address project effects. Results of using the PA or the Section 7(a)(2) process will be included in the permit application(s). FDOT recognizes that for state actions requiring federal permitting, the USACE, USCG, or FDEP acting as lead agencies may be required to initiate consultation with USFWS or FWC. However, it is understood for these projects that no additional conservation measures for the panther beyond those indicated in the PA or Section 7(a)(2) document would be required by USFWS or FWC during this federal permit consultation regardless of whether the permit agency has formally recognized this Plan.

Off-system Projects

It is envisioned that both FHWA and city or county governments would benefit from implementing this Plan. FHWA retains the responsibility for NEPA decisions and ESA consultation for transportation projects that are provided funding through FHWA direct recipient grant programs as well as the Recreational Trails program. Addressing hot spots, or other challenges faced by the panther on local roads is a key component to ensuring recovery of the panther population. When either of these types of projects require ESA consultation for the panther, FHWA or a local government (either through formal acknowledgement of a specific program participating in this Plan, or as agreed to by USFWS on a project-by-project basis) could chose to participate in this Plan. Alternatively, these entities could use this Plan as a springboard for developing their own conservation plans that best fit their needs. Nothing in this Plan should be construed as to require other entities to use this Plan, except for LAP projects where FDOT is the lead agency. In these cases, FDOT strongly encourages the LAP entities to coordinate with FDOT early in the project development process to understand what conservation measures, if any, may be applicable to a given project so that there is adequate time and budget to include them in the PD&E study or construction plans.

Private Developers

As noted earlier, the population of Florida continues to grow at roughly 800 people moving to the state every day. The Florida Office of Economic and Demographic Research noted in the Executive Summary of the Demographic Estimating Conference held February 2023, "For the five-year period beginning April 1, 2023, and ending April 1, 2027, population growth over the prior year is expected to average 304,311 net new residents per year (834 per day), representing a compound growth rate of 1.33% over this time horizon." New Floridians will need housing, jobs, schools, and social services, all of which will lead to additional construction or redevelopment and will have the potential to increase traffic volumes on state and local roads. As private entities look for opportunities to address adverse effects to the panther population or its habitat from new developments, this Plan may provide unique opportunities to partner with FDOT or local transportation organizations to address existing or anticipated hotspots, acquire conservation lands, or support range expansion conservation measures. As the exact mechanism and agreement process for these situations can vary depending on the specific needs of FDOT, the private entity, and the requirements of regulatory entities, **Appendix F** provides a framework for ways in which joint projects may be accomplished should FDOT choose to pursue these avenues.

Conservation partners – FWC, FDEP, Water Management Districts, NGOs

Like the other partners already discussed, it may be advantageous at times for FDOT to partner with other state conservation entities or NGOs to implement conservation measures. For example, a water management district developing a new project may find that funding a priority in **Appendix D** would offset their adverse effects on the panther. As noted for private developers, this Plan may also provide these organizations with unique opportunities to partner with FDOT to implement conservation measures. Again, the exact mechanism and agreement process for these situations can vary depending on the specific needs of FDOT, the organization, and the requirements of regulatory entities, but **Appendix F** includes this scenario within the funding framework should FDOT choose to pursue these avenues.

PLAN EXPANSION OPPORTUNITIES FOR FDOT IN THE FUTURE

Other FDOT Districts

As discussed in the ***Purpose and Scope*** section, this Plan is anticipated to be implemented incrementally. The initial focus area for this Plan will be FDOT District 1 which encompasses the most area in current panther habitat, has well established relationships with agency and NGO partners, and has the most robust plan for applying conservation measures. FDOT expects to widen the reach of this Plan to Districts 4, 5, 7, and the Florida Turnpike Enterprise (FTE) within a few years after the initial launch with a goal to do it as soon as practicable.

OEM and District 1 will coordinate with the other Districts for knowledge transfer, development of priorities, and outreach to new partners. For example, in March 2023, Hillsborough County Transportation Planning Organization (TPO) "directed its staff and encourages its local governments and partner agencies to incorporate wildlife crossings into their planning processes". Since Hillsborough County is in District 7, bordering District 1, the two districts have been collaborating on opportunities across their boundaries (along with other partners like Hillsborough County and University of Central Florida).

This ramp-up approach will allow time for refinement of the prioritization methodologies, to understand new funding mechanisms, and apply other lessons learned through the early phase of this Plan. Should the panther range eventually expand beyond the noted Districts, FDOT will expand the reach of this Plan accordingly. No revisions or amendments to this Plan will be required for expansion of the geographic extent of this Plan.

Additional Species

Conservation plans "may be geared towards ecosystems and may consider and address candidate species, petitioned species, and/or species of concern, in addition to species listed as threatened or endangered. Conservation Plans may address individual or multiple species and their habitats, as situations warrant" (USFWS Southeast Region). As this Plan is implemented FDOT, USFWS, and FWC may find it beneficial to include additional species when recovery goals align with transportation program goals. When the agencies mutually agree that new species should be addressed under a conservation plan, updating this Plan should be considered to reduce duplication of effort, unless a new Plan is more appropriate. For situations where revising this Plan is the best approach, FDOT, USFWS, and FWC will update this Plan accordingly with outreach to other partners as applicable.

DOCUMENTATION AND REPORTING

Documentation

FDOT Project Documentation

Consultation conducted pursuant to Section 7(a)(2) will be documented in the FDOT project file as required by the FDOT PD&E Manual. Projects using the FDOT Programmatic Approach for Minor Transportation Activities will document use through the Statewide Environmental Project Tracker (SWEPT) module for this PA. Otherwise, the Section 7(a)(2) Consultation Form will be used.

Documentation of Changes to Conservation Plan

This Plan is intended to be flexible and reactive to both transportation program and panther needs as they change over time. New conservation measures may be identified or revisions to methodologies in the appendices may be warranted. When new conservation measures are identified, FDOT will coordinate with USFWS and FWC and if agreed to, written documentation (e.g., letter or email) can be appended to this Plan documenting the new measures. When changes to the Wildlife Crossing Prioritization Methodology (**Appendix E**) or the Conservation Measures Funding Mechanisms Framework (**Appendix F**) are needed, upon agreement between FDOT, USFWS, and FWC, the update appendices will be appended to this Plan. Any other changes not identified herein should follow a similar process.

Reporting

FDOT will provide an annual report to USFWS and FWC of the actions undertaken by FDOT to support specific conservation measures identified in this Plan. The report will not include FDOT actions where consultation occurs through the ***FDOT Programmatic Approach for Minor Transportation Activities*** as there is a separate reporting requirement for these actions. The report will not include actions by others that may also use this Plan for their own actions or programs.

The report submittal timeframe will be coordinated with the annual update of the priority wildlife crossing locations and prioritization methodology (**Appendix E**). The first report is anticipated to include activities underway during development of this Plan. Should FDOT need additional time to provide the report for a given year, a notification to USFWS and FWC will be provided along with the anticipated submittal timeframe. The report format and level of detail will remain flexible to suit the needs of this Plan but will be sufficient for USFWS and FWC to confirm a net conservation benefit is being provided. Adaptive management will specifically be evaluated during the annual Wildlife Crossings Prioritization Methodology updates and meetings as described in **Appendix E**. Areas identified for potential adaptive management strategies outside of this process will be documented in the annual report for further discussion with USFWS, FWC, and other partners as applicable.

REFERENCES

- ESA Section 7(a)(1) Implementation Framework (USFWS Southeast Region)
- A Programmatic Approach for Florida Department of Transportation Activities within Panama City Crayfish Habitat
- FDOT Programmatic Approach for Minor Transportation Activities
- Florida Transportation Fast Facts (accessed 2/28/23)
- FDOT Engineering Safety Countermeasures (accessed 3/1/23)
- Proven Safety Countermeasures - Safety | Federal Highway Administration (dot.gov) (accessed 3/1/23)
- Flexible Pavement Design Manual (accessed 3/1/23)
- Pavement Condition (fdot.gov) (accessed 3/1/23)
- FDOT Design Manual (accessed 3/2/23)
- Florida Department of Transportation Systems Engineering and Intelligent Transportation Systems (ITS) Architecture Procedure (accessed 3/2/23)
- FDOT Standard Specifications for Road and Bridge Construction (accessed 3/2/23)
- FDOT Structures Design Guidelines (accessed 3/2/23)
- USDOT FHWA Bridge Maintenance Reference Manual (accessed 3/2/23)
- Bridge Condition Terminology (accessed 3/2/23)
- Florida Office of Economic and Demographic Research - Executive Summary (state.fl.us) (accessed 5/16/23)
- Florida Fastest-Growing State for First Time Since 1957 (census.gov) (accessed 5/25/23)

HISTORY

- Version 1.1 - May 2024 - Requested revisions to conservation measures 7.1 and 7.2. Added History section.

PHOTO LOG

Picture # *(*video capture)*	Location in document	Photo Credit and Link		Picture
1	Cover page	**Credit**	Daniel Smith, Dept. of Biology, University of Central Florida	
		Link	https://photos.google.com/share/AF1QipPBxVrPEMDoR5jQKQ7Usv538-vAAC8veNte1ZzTidfDej0mIwcGm2mx65RvXst3MQ/photo/AF1QipM2lG4i274TnOzKkZme8vCqAcmXVtr5ZRBhN5uH?key=Q1RlejhuRHV6c291ZlpMNzZsdklaSmtwU3R0LXNR	
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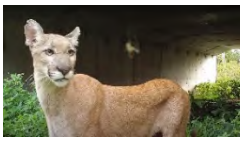
3*	Executive Summary	**Credit**	FGCU Wings of Hope Panther posse program	
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4	Executive Summary	**Credit**	fStop Foundation	
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5	Introduction: Wildlife Crossing Shelves	**Credit**	FDOT - District 1	
		Link	*No Link Available*	
6	Introduction: Wildlife Crossing Shelves	**Credit**	FDOT - District 1	
		Link	*No Link Available*	
7	Introduction: Timber and Concrete Pile Crossings	**Credit**	fStop Foundation	
		Link	*No Link Available*	
8	Introduction: Wildlife cameras, photos, and video documentation	**Credit**	FGCU Wings of Hope Panther posse program	
		Link	https://photos.google.com/share/AF1QipNc64c2juwG4p7abR-0LX7K-0SurVxVSw-MC_cVov98CokRHC2PD-QHcDPOs0FmQg/photo/AF1QipMwKRwlyQiBBdxBlsvFMyJZta-p69ipYi5nPI9L?key=RFYtWXBNN1hzUUJDTEV3bDZBLXlZdEVBbTh6aGVn	
9*	Authorized Projects/Activity Types/Descriptions	**Credit**	FDOT - District 1	
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Picture # *(*video capture)*	Location in document	Photo Credit and Link		Picture
10	Authorized Projects/Activity Types/Descriptions	**Credit**	Daniel Smith, Dept. of Biology, University of Central Florida	
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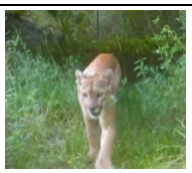
11*	Florida Panther Species Account	**Credit**	FGCU Panther Posse	
		Link	https://photos.google.com/share/AF1QipM1E9U-ozWZRbyBYuLdsetcsQDXfTxcLMKl_zRnSA_RHD5VBhHbd1Zgz6oQW99DtQ/photo/AF1QipMXbmqCfbADabRXBaddHjf09N5vkcKy_0noE4b3?key=a0ZIS1h6TEdZRmRHNFZ2djZtMTQzenlCSWMySTJn	
12*	Florida Panther Species Account	**Credit**	FGCU Wings of Hope Panther posse program	
		Link	https://photos.google.com/share/AF1QipM1E9U-ozWZRbyBYuLdsetcsQDXfTxcLMKl_zRnSA_RHD5VBhHbd1Zgz6oQW99DtQ/photo/AF1QipMxqLR8mBmXBdzegmsGd-xD5F_4YbNudWPCnqBz?key=a0ZIS1h6TEdZRmRHNFZ2djZtMTQzenlCSWMySTJn	
13*	Effects Analysis of the FDOT Transportation Program	**Credit**	FGCU Wings of Hope Panther posse program	
		Link	https://photos.google.com/share/AF1QipM1E9U-ozWZRbyBYuLdsetcsQDXfTxcLMKl_zRnSA_RHD5VBhHbd1Zgz6oQW99DtQ/photo/AF1QipOSWzk4UmYW9_nRGzY1HUo8Stl2N4V0A-iIQ5vI?key=a0ZIS1h6TEdZRmRHNFZ2djZtMTQzenlCSWMySTJn	
14*	Effects Analysis of the FDOT Transportation Program	**Credit**	fStop Foundation	
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15	Conservation Measures	**Credit**	FDOT - District 1	
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16*	Documentation and Reporting	**Credit**	fStop Foundation	
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17*	Documentation and Reporting	**Credit**	fStop Foundation	
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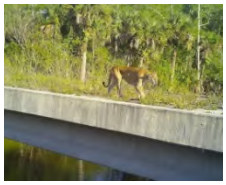
18	Documentation and Reporting	**Credit**	USFWS Panther Refuge	
		Link	https://photos.google.com/share/AF1QipOQXSLXNXAp2ZaMUoIGa73E0xiuC2wby72g0Qa5jRYDRbc_RKyGefeK6pf5BTtvdg/photo/AF1QipMXsfWRV11bolZQjz3S-ksA_zLSXv71oHBk2bwb?key=UEREWlVNSkdTZncxUzBSRmRfclYyeW1ORVQ5NWJn	

APPENDICES

A. Lead Agency ESA consultation process letter Feb 2019

B. Section 7(a)(2) Process

C. FDOT District Map

D. Current List of FDOT Specific Project Panther Conservation Measures

E. Wildlife Crossing Prioritization Methodology

F. Conservation Measures Funding Mechanisms Framework

G. PHU Methodology

APPENDIX A

Lead Agency ESA consultation process letter Feb 2019

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

March 13, 2019

Jason Watts
Director, Office of Environmental Management
Florida Department of Transportation
605 Suwannee Street
Tallahassee, Florida 32399

Subject: FDOT Lead Agency Role for Endangered Species Act Consultation

Dear Mr. Watts:

Thank you for your February 13, 2019, letter regarding the Florida Department of Transportation (FDOT) role as lead agency for Endangered Species Act (ESA) consultation.

FDOT is unique due to its authority established in federal legislation for responsibilities under the National Environmental Policy Act (NEPA) for highway projects[1]. The Federal Highway Administration assigned, and FDOT assumed, all responsibilities under federal environmental laws, including those under the Endangered Species Act. FDOT is the lead agency for ESA consultation on federal projects; FDOT coordinates with federal agencies on state-funded projects that require ESA consultation during permitting.

1. For federal-funded projects, as the "lead agency," FDOT analyzes and consults with the U.S. Fish and Wildlife Service (Service) as part of its Project Development and Environment (PD&E) Study phase. For minor projects without a PD&E phase, FDOT will initiate consultation during the permit application process.

2. For state-funded projects requiring ESA consultation for federal permits, FDOT will obtain technical assistance from the Service during the PD&E phase, and subsequently coordinate with the U.S. Army Corps of Engineers and/or the U.S. Coast Guard to determine lead agency status for ESA consultation.

Thank you for the clarification of the process and expectations for ESA consultation as FDOT manages these distinct categories of federal and state-funded transportation projects in Florida. If you have any questions, please contact me at 772-469-4285.

Sincerely,

Larry Williams

Larry Williams
State Supervisor

cc:
Service, Jacksonville (Jay Herrington)
Service, Panama City (Catherine Phillips)
Service, Vero Beach (Roxanna Hinzman)
USACE, Panama City (Andrew Kizlauskas)
USCG, Miami (Randall Overton)

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[i] The 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Section 6005(a) of the SAFETEA-LU established a Surface Transportation Project Delivery Program that allowed the Secretary of the United States Department of Transportation to assign to certain states the USDOT Secretary's responsibilities under the National Environmental Policy Act of 1969 (42 U.S.C. 4321, *et seq.*) and all or part of the USDOT Secretary's responsibilities for environmental review, consultation, or other action required under any Federal environmental law with respect to one or more highway projects within the State. As modified by MAP-21, this assignment of responsibility became applicable to all states.

In 2016, the Florida Department of Transportation assumed the Federal Highway Administration's (FHWA's) responsibilities under the National Environmental Policy Act (NEPA) for highway projects on the State Highway System and Local Agency Program projects off the SHS, pursuant to 23 U.S.C. 327. In general, FDOT's assumption includes all highway and roadway projects in Florida whose source of federal funding comes from FHWA or which constitute a federal action through FHWA. This includes responsibilities for environmental review, interagency consultation and other regulatory compliance-related actions pertaining to the review or approval of NEPA projects. Therefore, whereas FHWA was previously identified as the Lead Federal Agency, this function is now served by FDOT with approval authority resting in the Office of Environmental Management (OEM). The scope of this assignment includes all of the USDOT Secretary's responsibilities for all NEPA document types (CE, EA and EIS) and all environmental regulations/laws (Section 4(f), Section 106 of the National Historic Preservation Act, Endangered Species Act, Clean Water Act, etc.) for highway projects. The NEPA *assignment* actually delegates the responsibilities, with an FHWA oversight role, as opposed to making FDOT a designated representative for consultation purposes. While "designated representatives" cannot initiate formal consultation, agencies like FDOT with delegated authority can. In summary, pursuant to 23 U.S.C. §327(a)(2)(8), FHWA assigned and FDOT assumed all of the USDOT Secretary's responsibilities for environmental review, reevaluation, consultation, or other action pertaining to the review or approval of highway projects required under the federal environmental laws.

Thu 3/7/2019 11:08 AM

AK Kizlauskas, Andrew A CIV USARMY CESAJ (US) <Andrew.A.Kizlauskas@usace.army.mil>

RE: Lead Agency for ESA Consultation (UNCLASSIFIED)

To Clark, Thu-Huong; Overton, Randall D CIV; Mark Cantrell

Cc Watts, Jason; Cornwell, Katasha; Randy Turner; Payne, Lyal C CIV USARMY CESAJ (USA)

EXTERNAL SENDER: Use caution with links and attachments.

CLASSIFICATION: UNCLASSIFIED

Good morning,

The Corps has appreciated the opportunity to discuss this important process to clarify and more efficiently address ESA requirements. The Corps concurs with the process outlined in the February 13, 2019 "FDOT Lead Agency Role for Endangered Species Act Consultation" letter.

V/R,

Andrew A. Kizlauskas
U.S. Army Corps of Engineers
Chief, Panama City Beach Permits Section
415 Richard Jackson Blvd., Ste. 411
Panama City Beach, FL 32407
(850) 763-0717

Wed 2/13/2019 11:42 AM

OR Overton, Randall D CIV <Randall.D.Overton@uscg.mil>

RE: Lead Agency for ESA Consultation

To Clark, Thu-Huong; Andy Kizlauskas (andrew.a.kizlauskas@usace.army.mil); Mark Cantrell

Cc Watts, Jason; Cornwell, Katasha; Randy Turner; D07-DG-DISTRICTSTAFF-DPB

Follow up. Start by Wednesday, February 13, 2019. Due by Wednesday, February 13, 2019.
You replied to this message on 2/13/2019 11:49 AM.

Lead Agency roles for ESA consultation.pdf
108 KB

EXTERNAL SENDER: Use caution with links and attachments.

The Coast Guard concurs with the Lead Agency roles for ESA consultation as outlined in the attached document. Thank you for the discussion and the opportunity to review the document.

Sincerely,

Randall Overton, M.P.A.
Chief, Permits Division
Coast Guard Seventh District Bridge Administration
909 SE 1st Ave Suite 432
Miami, Fl 33131
(305) 205-0795 Cell
(305) 415-6736 Office

FDOT

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN THIBAULT, P.E.
SECRETARY

February 13, 2019

VIA ELECTRONIC MAIL

Mark Cantrell
U.S. Fish and Wildlife Service
Statewide Transportation Coordinator
1601 Balboa Avenue
Panama City, FL 32405

Andrew Kizlauskas
U.S. Army Corps of Engineers
Chief, Panama City Permits Section
415 Richard Jackson Blvd., Ste. 411
Panama City Beach, FL 32407

Randall Overton
U.S. Coast Guard
Commander, Seventh Coast Guard District
909 SE 1st Avenue
Suite 432
Miami, FL 33131

RE: FDOT Lead Agency Role for Endangered Species Act Consultation

Dear Gentlemen,

On December 14, 2016, the Florida Department of Transportation (FDOT) entered into an agreement with the Federal Highway Administration (FHWA) to assume its responsibilities under the National Environmental Policy Act (NEPA) for highway projects (NEPA Assignment). Under NEPA Assignment, FDOT performs NEPA analysis, review and approvals, including responsibilities under the Endangered Species Act of 1973, as amended. FDOT follows the FHWA guidance memo from February 2002 regarding the implementation of the Endangered Species Act (ESA) for highway projects. FDOT would like to take this opportunity to document its role as the "lead agency" for ESA consultation on federal projects as well as how it intends to coordinate with federal agencies on state funded projects that require ESA consultation during permitting.

For federal projects, FDOT as the "lead agency" will initiate consultation with the U.S. Fish and Wildlife Service (USFWS) as part of the Project Development and Environment (PD&E) Study. FDOT will provide analysis appropriate for the USFWS to give concurrence on species and critical habitat effect determinations (excluding "no effect" determinations as documented in previous correspondence with USFWS 12/14/18). Supporting information for "no effect" determinations and results of any applicable programmatic or individual consultation during PD&E are documented in the NEPA Environmental Document. If there is a need to re-initiate consultation during the Design Phase, FDOT maintaining the role of "lead agency" will re-initiate consultation with the USFWS. The consultation information will be provided to the US Army Corps of Engineers (USACE) and/or the U.S. Coast Guard (USCG) as part of the permit application(s) to be incorporated in the regulatory agency action.

For minor projects that do not have a PD&E phase (typically approved as a Type 1 Categorical Exclusion (CE) and sometimes as Type 2 CEs), FDOT as the "lead agency" will initiate ESA consultation with the USFWS and provide the consultation information to the USACE and/or USCG as part of the permit application(s) to be incorporated into the regulatory agency action.

For state funded projects requiring ESA consultation as a result of federal permitting, FDOT will obtain technical assistance from the USFWS as part of the PD&E Study. Results of the technical assistance will be included in the permit application(s). At the time of permitting for these projects, the USACE and/or USCG will coordinate with FDOT to determine which permitting agency should be the "lead agency" to initiate ESA consultation.

We respectfully request a reply confirming your agency's concurrence with this process. Thank you for your partnership in streamlining transportation projects. If you have any questions, please contact me at 850-414-4316 or by email at Jason.Watts@dot.state.fl.us.

Sincerely,

Jason Watt
Director, Office of Environmental Management

JW/thc

APPENDIX B

Section 7(a)(2) Process

Note that the Section 7(a)(2) form may be modified as mutually agreed by FDOT and USFWS for improving clarity and utility.

FLORIDA DEPARTMENT OF TRANSPORTATION CONSERVATION PLAN FOR THE FLORIDA PANTHER PROJECT-LEVEL SECTION 7 FORM

Purpose: The purpose of this form is to ensure that the Florida Department of Transportation (FDOT) complies with Section 7(a)(2) and 9 of the Endangered Species Act (ESA) and the procedures for informal and formal consultation described in Code of Federal Regulations 402.13 and 402.14 for the action(s) associated with the FDOT Conservation Plan for the Florida Panther (Plan) described below in Section B. Specifically, this project-level section 7(a)(2) form is only for the endangered Florida panther which is covered by the Plan described in the Action section. And this form documents, quantifies, exempts, and tracks take of Florida Panther that is reasonably certain to occur. A separate consultation is required for any other listed species and/or critical habitats in the action area.

Action: Implementation of FDOT activities or projects in accordance with the Plan, developed under Section 7(a)(1) of the Endangered Species Act (ESA) of 1973. Activities and projects are defined in the section ***Authorized Projects/Activity Types/Descriptions*** of the Plan and may occur either within the Florida panther focus area or outside the focus area with potential for effects (either beneficial or adverse).

Projects that qualify for ESA consultation under the FDOT Programmatic Approach for Minor Transportation Activities (PA) (refer to Section V, Group 1) will be documented through use of the Statewide Environmental Project Tracker (SWEPT) PA tool and not on this form.

Date: Click to enter a date.

FDOT Project Title:
FDOT Financial Project ID:
FDOT District:
County:

Service Consultation Code:
Date Received:
Consultation Initiation Date:

INSTRUCTIONS

1. Sections A through D are to be drafted by FDOT and submitted to FWS for review and consideration in finalizing the form.
2. Select Type of Project
3. Describe the FDOT project or activity.
4. Provide Effects Analysis and select the appropriate Determination of Effects.
5. Attach Project Level Section 7 Form to Natural Resources Evaluation (which acts as a Biological Assessment per FDOT Project Development and Environmental Manual, Part 2, Chapter 16) when consultation is also required for other listed species or critical habitat.
6. FWS to complete Sections E through G
7. Complete Effects of the Acton and ***Incidental Take*** sections when appropriate.
8. Obtain
9. **Approval** and signature(s) as appropriate.
10. ES office should enter the project into the appropriate FWS database (e.g., ECOSphere) as a project under the Plan. One "master" ECOSphere project for the Panther plan with subsequent projects linked to that record.
11. Attach the Project Level Section 7 Form to the Biological Opinion when consultation is also required for other listed species or critical habitat.
12. Ensure the official file or administrative record contains all necessary information.

A. Type of Project (Refer to Section III of the Plan) – choose all that apply:

☐ Safety Improvements
☐ Resurfacing, Restoration, Rehabilitation (RRR)
☐ Add Lanes and Reconstruction
☐ New Construction
☐ Bridge Rehabilitation, Replacement, or Widening
☐ Toll Facilities
☐ Shared Use Path
☐ Rest Areas, Welcome Centers, Services Plazas, Weigh Stations
☐ Landscaping
☐ Intelligent Transportation Systems (ITS)
☐ Wildlife Crossings
☐ Maintenance
☐ Emergency Repairs

B. Project Description

Describe the project including, limits, scope, anticipated letting date, etc. Attach any graphics or plan sheets that may support this discussion.

C. Effects Analysis (Refer to *Effects Analysis of the FDOT Transportation Program* of the Plan)– choose appropriate project Group and provide required details in that section to support the effect determination. Group 1 projects (qualifying for the minor transportation activities PA) are completed in SWEPT tool.

☐ **Group 2** - Projects with activities in Category A or B of the PA that require minor amounts of right of way and which the PA conservation measure (noted below) is still appropriate.

If land cover types for minor right of way needs are either Urban or Water, provide a brief description of the additional right of way locations (or provide a figure). If the right of way to be acquired for the project includes additional land cover types, go to Group 3.

Does the project include new right of way fencing? If yes, fence ends should be positioned so that animals are not funneled onto the roadway. Ideally, fence ends should occur at bridges or culverts to encourage safe passage beneath the roadway. Discuss applicability of this conservation measure to the project.

The resulting effect determination from the PA is (select one: NE/MANLAA) and is still appropriate given the information above.

☐ **Group 3** - Projects with activities in Category A or B of the PA that do not fit in Group 2, and Projects with activities in Category C of the PA that require right of way or reach a MA determination when using the PA.

1) For these projects, FDOT will first apply the USACE Florida Panther Effect Determination Key (February 19, 2007).
    a) For projects that reach a "no effect" determination through the key, no further consultation will be required.
    b) For projects that reach a "may affect" determination FDOT will consider habitat impacts and documented panther occurrences as follows:
        i. FDOT will purchase the appropriate PHUs based on the USFWS Panther Habitat Assessment Methodology (September 2012), except for retrofit projects in which case FDOT may use the PHU credit for Wildlife Crossings methodology in **Appendix G** to address any PHUs that may be required.
        ii. Where there is a documented panther occurrence within a two-mile radius of the project limits within the last two years FDOT will consider implementing the following conservation measures as applicable and appropriate for the project conditions.
            (1) ROW fencing (to reduce potential for WVCs)
            (2) Riprap Modifications under bridges to support incorporation of wildlife shelves.
            (3) Culvert upgrades or new culverts intended to reduce WVCs.
            (4) Application of other conservation measures outlined in the Plan.

Discuss the application of the USACE Florida Panther Effect Determination Key (February 19, 2007), and for projects that do not reach a "no effect" determination, discuss proposed conservation measures and provide the effect determination (either "may affect, not likely to adversely affect" or "likely to adversely affect" as appropriate).

☐ Group 4 - Projects not covered by the PA outside the Panther focus area. No habitat impact offsets through purchase of PHUs is required, but there may be an opportunity for FDOT to provide conservation measures that reduce WVCs (current or future anticipated) or that support range expansion. FDOT will consider documented panther vehicle hot spots (e.g., most recent version of the Southwest Florida Roads Hot Spots GIS data layer) within the project limits and will consider implementing conservation measures outlined in the Plan as applicable and appropriate for the project conditions.

Describe documented panther occurrences. Discuss whether there are any documented WVCs. Describe any efforts to offset documented WVC, potential future WVCs, panther range expansion opportunities, or other beneficial effects from implementation of the project. Discuss proposed conservation measures and provide the effect determination.

☐ Group 5 - Projects not covered by the PA inside the panther focus area. Both habitat and the potential for direct impacts to panthers will be addressed through conservation measures for these projects using conservation measures outlined in the Plan as appropriate and applicable to the project conditions.

<u>Habitat</u>
Describe the potential for the project to fragment existing panther habitat. Describe the habitat impact avoidance and minimization measures (road widening vs new alignment). Avoidance of higher quality panther habitat with pond sites, etc. Describe the amount/quality of impacted panther habitat within the project footprint using USFWS Panther Habitat Assessment Methodology (September 2012). Provide table. Discuss where PHUs will be purchased from or that will be offset through application of the methodology in **Appendix G**.

<u>Direct Impacts</u>
Describe in detail the amount of existing Panther Vehicle Collisions (PVCs) within the project limits or road segment including identified panther hotspots using most recent version of the Southwest Florida Roads Hot Spots GIS data layer. Specifically identify any hotspots with greater than 2 PVCs within the project footprint. Include relevant PVC information including dates of collisions (within last 5-10 years or older), clusters, age, sex, time of day/year.

Describe the presence/absence of existing conservation lands adjacent to the project footprint.

Describe the existing land use/habitat adjacent to the project footprint as it relates to panther and panther prey usage (hunting, breeding, denning). Include any future land use changes/planned conservation easements/acquisitions (Florida Forever, etc.).

Describe any past actions or future planned actions in the vicinity of the project footprint which may reduce or limit panther vehicle collisions, provide range expansion opportunities, or other beneficial effects from implementation of the project. Discuss proposed conservation measures and provide the effect determination.

D. Determination of Effects

Choose one of the following:

☐ Project results in a No Effect or May Affect, Not Likely to Adversely Affect determination with appropriate conservation measures.

☐ Project results in a May Affect, requiring further consultation, or a May Affect, Likely to Adversely Affect determination.

TO BE FILLED OUT BY USFWS

E. Describe the Effects of the Action

Describe the Effects of the Action on the panther.

Effects Summary

☐ The effects of the project **are not** reasonably certain to result in any adverse effects to the Florida Panther. Therefore, this project is not likely to jeopardize the Florida Panther **[*Proceed to section I of this form*.]**

☐ The effects of the project **are** reasonably certain to result in adverse effects to the Florida Panther that may (or may not) rise to the level of incidental take. However, the project's activities and effects fall within those considered by the Plan, (see Plan for detailed explanation). **[*If incidental take is reasonably certain, proceed to section F of this form. If not, proceed to section I of this form*.]**

F. Incidental Take

For projects with a May Affect determination and which injury or death to panther is reasonably certain to occur as a result of the action or associated habitat loss, estimate the extent or amount of anticipated take in the table below: **[*Then proceed to section I of this form.*]**

Estimate the extent or amount of anticipated take.

Anticipated Take	**ITS Amount or Extent**
Panther Habitat	*# PHUs*
Vehicle Collision Range	*Between X and Y*

G. Incidental Take Monitoring and Reporting

Incidental take should be monitored and reported using the same units of measure (e.g., impacted PHUs). During and post project construction, FDOT will report if the amount of impacted panther habitat exceeded the amount permitted. Additionally, FDOT annually produces the panther hotspot data which tracks panther vehicle collisions. FDOT will monitor the rate of PVCs on state roadways to identify any post project hotspots. If any new hotspots are identified, FDOT will coordinate with the Service to determine if any additional protective or conservations measures are reasonable and prudent.

H. Approval

Based on the information provided in this form, it has been determined that [*choose one*]:

☐ 1. The Project meets the coverage criteria described in the Plan therefore is not likely to jeopardize the continued existence of a species. Any incidental take that is reasonably certain to occur is exempted from section 9 prohibitions provided the project complies with the associated consultation.

☐ 2. The Project does not meet the coverage criteria described in the Plan or the Project Leader defers the project for review by the Regional Office for the following reason(s):

Reviewing ES Biologist

Name/Title	Signature	Date

Supervisor (for projects with no take), Division of Environmental Review Approval

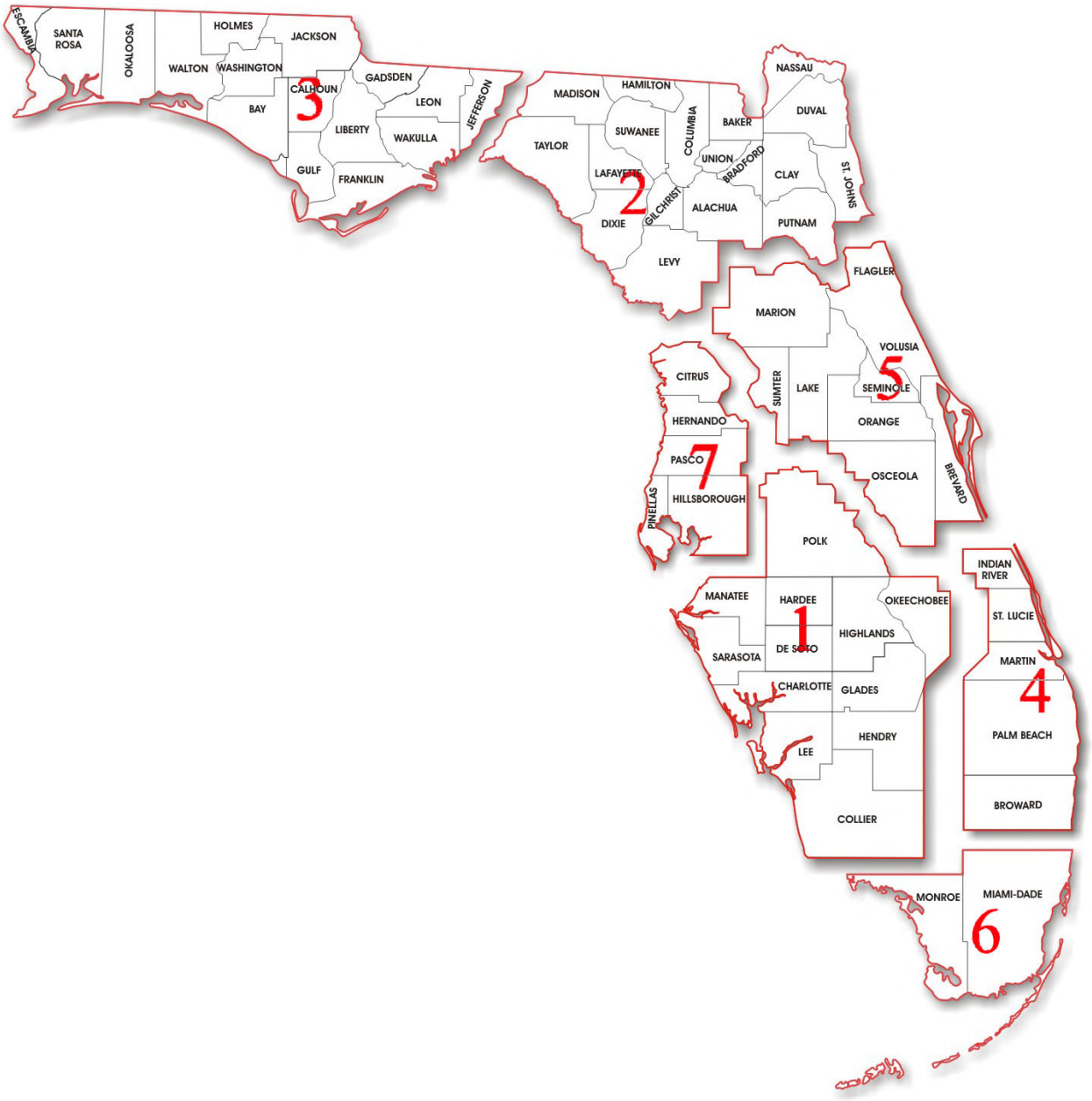
Name/Title	Signature	Date

Manager (for projects where take is reasonably certain to occur), Division of Environmental Review Approval

Name/Title	Signature	Date

APPENDIX C

FDOT District Map



APPENDIX D

Current List of FDOT Specific Project Panther Conservation Measures

FDOT Specific Project Panther Conservation Measures

Timing	Financial # xxxxxx-x	Priority #	County	Project Description	Addressing WVCs or Providing Range Expansion Opportunity	# of Panther collisions within 1 mile	Total Funding Need (PDC)	Add Needs in Ph 22 $ (PD&E)	Add Needs in Ph 32 $ (Design)	Add Needs in Ph C2-01 $ (Wetland & PHU Mitigation)	Add Needs in Ph 43 $ (Right-of-Way)	Add Needs in Ph 52 $ (Construction)	Add Needs in Ph 62 $ (CEI)	ROW - Number of Parcels Remaining	On MPO Priority List (Yes/No)	SIS (Yes/No)	Section	MP Beg	MP End	Project Limits Description	Work Mix	Proposed/Advanced Production Date	Current Production Date	Current Letting Date	Window of Opportunity - Date Needed in Order to Commit to Advance	Proposed Contract Delivery Method
Fully Funded	**436673-1** US 98 from Socrum Loop to CR 54		Polk	Construct a new wildlife crossing near Green Swamp East Tract and 5 smaller culvert crossings	Range Expansion	0	fully funded																		
	434886-2 SR 700 (US 98) John Singletary Bridge replacement over Peace River		Polk	Re-construct a new bridge over the Peace River with wildlife shelves, more vertical clearance, and limited wildlife fencing	WVC and Range Expansion	1	fully funded																		
	430848-1 SR 82 from Hendry C/L to Gator Slough Ln		Collier	Replace two bridges with new bridges with wildlife shelves, more vertical clearance and wildlife fencing.	WVC	15	fully funded																		
	452544-1 I-75 from Golden Gate to Corkscrew		Collier	Construct 2.7 miles of wildlife fencing on both sides of I-75 adjacent to the Larry Kiker Preserve	WVC	4	fully funded																		
	425843-2 I-75 at SR 951		Collier	Construct 0.8 miles of wildlife fencing and noise walls on both sides of I-75 west of CR 951	WVC	3	fully funded																		
	444008-2, -3, -4 I-75 Alley Pile Bridges		Collier	Construct pile bridges over canals at 6 locations	WVC	2	fully funded																		
	448693-1 SR 29 Roadside Animal Detection System (RADS)		Collier	Construct Roadside Animal Detection System (RADS) - 1.6 miles	WVC	7	fully funded																		
	201214-8 I-4 at Saddle Creek Overpass		Polk	Construct new wildlife crossing overpass over I-4 near Saddle Creek	Range Expansion	0	$15,561,680					$14,331,723	$1,229,957												
	430185-7 SR 33 at Saddle Creek Underpass		Polk	Construct new wildlife crossing underpass under SR 33 near Saddle Creek	Range Expansion	0	$5,258,416					$4,568,416	$690,000												
Within 5-years**	**417540-8** SR 29 at Owl's Hammock	1	Collier	Construct a new wildlife crossing near Owl's Hammock including crossing of the Barron Canal and wildlife fencing to funnel wildlife to the crossing.	WVC	10	$4,147,415	$0	design provided by 417540-3 (RS&H)	surplus credits from BCMB	$50,000	$3,557,415	$540,000	1 Parcel (east side of Barron Canal)	No	Yes	03080000	30.050	31.200	SR 29 at Owl's Hammock	Pedestrian/Wildlife Underpass	3/1/2023	N/A	1/1/2099	12/1/2021	DBB
	449143-1 SR 29 North of Panther Refuge	2	Collier	Construct a new wildlife crossing north of the Panther Refuge including crossing of the Barron Canal and wildlife fencing to funnel wildlife to the crossing.	WVC	10	$6,379,771	$0	funded - ARPA	surplus credits from BCMB	$80,000	$5,778,431	$521,340	1 Parcel (east side of Barron Canal)	No	Yes	03080000	23.711	25.233	SR 29 North of Panther Refuge	Pedestrian/Wildlife Underpass	3/1/2024	N/A	1/1/2099	12/1/2021	DBB
	449144-2 US 27 Venus Wildlife Crossing	3	Highlands	Construct a new wildlife crossing along US 27 near Venus and wildlife fencing to funnel wildlife to the crossing.	WVC	1	$8,025,480	$0	funded - ARPA	none expected	$0	$7,327,444	$698,036	None	No	Yes	9010000	4.746	5.125	US 27 Venus Wildlife Crossing	Pedestrian/Wildlife Underpass	3/1/2024	N/A	1/1/2099	12/1/2021	DBB
	449149-1 SR 29 from SR 78 to CR 74	4	Glades	Raise profile of SR 29 to prevent roadway overtopping and incorporate wildlife crossing features by replacing at least two existing bridges (Chapparal Slough and Lone Pine Creek)	WVC	1	$14,859,102	$0	$2,000,000	$0	$0	$11,179,102	$1,680,000	None	No	Yes	05090000	4.069	11.611	SR 29 from SR 78 to CR 74	New Bridge	3/1/2024	N/A	1/1/2099	12/1/2021	DBB
	## SR 80 at Roberts Canal	5	Hendry	Add wildlife shelves under existing SR 80 bridges over Roberts canal	WCC	3	TBD																		
	443122-1 SR 66 Highlands Hammock	6	Highlands	Construct a new bridge along SR 66 near Highlands Hammock to prevent roadway overtopping and incorporate wildlife crossing features (shelves) and wildlife fencing to funnel wildlife to the crossing.	WVC and Range Expansion	1	$6,893,751	$1,000,000	$1,500,000	surplus credits from PRMB	$112,000	$4,717,751	$570,000	1 Parcel	No	No	09140000	0.580	3.059	SR 66 Highlands Hammock	New Bridge	3/1/2024	N/A	1/1/2099	12/1/2021	DBB
Other Planned CWE	449145-1 US 41 east of CR 92 bridge replacement		Collier	Replace bridge# 030039 to provide wildlife shelves on both sides and more vertical clearance and add wildlife fencing		4	$6,328,631	$0	$1,000,000	surplus credits from BCMB	$0	$4,628,631	$700,000	None	No	No	03010000	28.644	29.050	US 41 east of CR 92 bridge replacement	Bridge Replacement	3/1/2023	N/A	1/1/2099	12/1/2021	DBB
	449146-1 US 41 Turner River Bridge Replacement		Collier	Replace bridge# 030083 to provide wildlife shelves on both sides and more vertical clearance and add wildlife fencing		10	$7,771,533	$0	$1,000,000	surplus credits from BCMB	$0	$6,041,533	$730,000	1 Parcel (needed for MOT)	No	No	03040000	6.058	6.666	US 41 Turner River Bridge Replacement	Bridge Replacement	3/1/2023	N/A	1/1/2099	12/1/2021	DBB
	449147-1 I-4 Eastern Green Swamp Wildlife Crossing west of US 27		Polk	****Only need to advance if Brightline goes to construction**** Construct a new wildlife crossing along I-4 west of US 27 to line up with Brightline wildlife crossing		0	$15,933,134	$0	$1,600,000	$800,000	$0	$12,483,134	$1,050,000	None	No	Yes	16320000	28.278	29.315	I-4 Eastern Green Swamp Wildlife Crossing west of US 27	Pedestrian/Wildlife Underpass	3/1/2024	N/A	1/1/2099	12/1/2021	DBB
	SR 29 at Twelve Mile Slough		Hendry	New Wildlife Crossing		0	TBD	$0			$0		$0	None	No	Yes	7060000	28.278	29.315		Pedestrian/Wildlife Underpass	3/2/2024	N/A	1/2/2099	12/1/2021	DBB
	SR 29 at Roberts Canal		Hendry	Replace culvert with culvert with wildlife crossing features		1	TBD	$0			$0		$0	None	No	Yes	7060000	28.278	29.315		Pedestrian/Wildlife Underpass	3/3/2024	N/A	1/3/2099	12/1/2021	DBB
	SR 29 at Sears Rd Canal		Hendry	Replace culvert with culvert with wildlife crossing features		0	TBD	$0			$0		$0	None	No	Yes	7060000	28.278	29.315		Pedestrian/Wildlife Underpass	3/4/2024	N/A	1/4/2099	12/1/2021	DBB
	SR 78 east of Ortona Rd		Glades	Construct new bridge with wildlife crossing features		0	TBD	$0			$0		$0	None	No	Yes	5040000									
	SR 70 east of Arcadia		Desoto	Replace 7 bridges with wildlife crossing features		0	TBD	$0			$0		$0	None	No	Yes	4040000									

APPENDIX E

Wildlife Crossing Prioritization Methodology

Wildlife Crossings Prioritization Methodology

Purpose

Wildlife crossings are an effective tool to reduce the likelihood of vehicle-related injuries and mortalities of Florida panthers and can improve the safety of the traveling public by reducing wildlife-vehicle conflicts. Wildlife crossings can also support safer range expansion opportunities for the species. However, there are challenges associated with the siting and installation of wildlife crossings and at times, other conservation measures may be appropriate. As such, a consistent method incorporating engineering and biological science to determine if measures are warranted, the type of measures needed, and the timeline when measures will be implemented will support decision-making for these types of conservation measures outlined in the FDOT Conservation Plan for the Florida Panther.

This document outlines the methodology that the Florida Department of Transportation (FDOT), US Fish and Wildlife Service (USFWS), and the Florida Fish and Wildlife Conservation Commission (FWC) will use to support prioritization of new wildlife crossings or other panther-vehicle mortality (PVM) reduction infrastructure and technology (e.g., fencing, Roadside Animal Detection Systems), on the State Highway System (SHS). This same methodology can be used by other transportation entities for off-system locations. The goal of this methodology is to identify and prioritize locations that can most likely reduce wildlife mortality, improve traffic safety, and support range expansion and recovery of the species, taking into consideration priority land acquisitions and anticipated land use conversions. The objectives are to understand the location specific conditions, select site-specific measures that best address the need, and determine if and when the measure can be funded and implemented. The strategy to accomplish these goals and objectives will be an interdisciplinary planning effort focused on addressing priority locations as funding, staffing, appropriate conservation lands, and other requirements (e.g., right of way acquisition, permitting) allow. The methodology is intended to be flexible while focusing on an established set of criteria. It will allow for both qualitative and quantitative approaches to decision making and will take input from stakeholders into consideration. The methodology is not intended to specifically establish a ranking or order in which locations will be addressed.

Selected locations for wildlife crossing related conservation measures will be available for FDOT, USFWS, FWC, and other federal, state, regional, local, NGO, or private partners to consider when identifying conservation measures to offset adverse effects from transportation or development programs or projects with a goal of supporting the USFWS's recovery plan objectives and actions for the Florida panther. Results of applying this prioritization methodology should not be construed as commitments for any entity unless documented in a Project Development & Environment (PD&E) study as a previous commitment, a Section 7(a)(1) program, or other agreement, permit, or mechanism for implementation by that entity. For FDOT, selected priority locations on the SHS will be reflected in a FDOT Conservation Plan for the Florida Panther annual report. FDOT will work towards implementation at these locations (with or without other partners), and the annual report will provide the status of each location. While FDOT encourages partnerships to address selected locations on the SHS when feasible, FDOT does not guarantee the ability to partner with any entity at any location on the SHS. Parties interested in participating with FDOT for a location on the SHS should begin coordination with FDOT as soon as possible to determine if and how partnering may be accomplished.

Methodology

Initial Priority List

FDOT has developed a list of locations (Appendix D) on the SHS where wildlife crossings/related conservation measures are currently planned or envisioned. This list includes projects that are fully funded (Group 1), partially funded projects that if conservation lands are acquired and/or if remaining funds are identified, could be constructed within the next 5-years (Group 2), and other identified conservation measure locations greater than 5-years away (Group 3). While FDOT is committing time and resources with the goal of eventual implementation of identified priorities, implementation is not guaranteed and timing of implementation may change as state-wide priorities, funding, staffing, management direction, science, or unforeseen circumstances arise.

USFWS and FWC have vetted the locations in Group 1 and 2 and have agreed that these are priority locations and that FDOT should continue working toward fully funding those in Group 2. These locations have also been presented to multiple non-governmental organizations (NGOs) in various forums. Additional coordination with FDEP or other land acquisition entities may be needed for projects in Group 2 before they can be fully funded and implemented. For the projects in Group 2, it will be FDOT's goal to gain a better understanding of land acquisition/conservation priorities in order to identify

funding while balancing the availability of FDOT staff resources. Continued coordination with USFWS, FWC, FDEP, NGOs, and others as needed will occur for these locations as outlined below.

Annual Update of Priority List

Once the Conservation Plan is implemented, FDOT will use the Steps to Determine Priority Locations listed below on an annual basis to consider additional locations for the priority list. FDOT will provide the list of suggested locations to USFWS, FWC, and other land acquisition stakeholders. These entities will meet annually to review the progress of projects in Groups 1 – 3 and identify which projects can move from Group 2 to 1, Group 3 to 2, and what new measures would be recommended for including in Groups 2 or 3. The meeting should include a discussion of lessons learned, expectations, cautions and concerns from our 30 plus years of experience in Florida. Other topics of discussion should include pre-construction monitoring (e.g., camera trapping) for Group 1 and 2 locations, post-construction monitoring for Group 1 projects approaching construction, and an assessment of research needs or other information needed to improve the prioritization methodology. Prior to finalizing this list each year, coordination with NGOs or other stakeholders will also take place. This effort will be timed to support the FDOT Work Program Budget Cycle to allow sufficient time to make funding requests. During the meeting in the fifth year, FDOT, FWS, and FWC will review the appropriate interval for prioritization meetings (annual or longer) going forward.

Steps to Determine Priority Locations

Annually, FDOT will identify additional locations to be considered for the priority list using the following steps. The process will begin in January, when the annual hot spots GIS layer is updated. FDOT will solicit input from NGOs and other stakeholders during the months of February and March (this could be via email or meetings). FDOT will take into account this stakeholder input and then submit a final list of suggested locations to USFWS and FWC for input and coordination (including the annual meeting) during April and May. The final list would be shared with FDOT Work Program office in June to support the budget cycle. Should it be necessary to adjust the timing of this process, FDOT will inform the USFWS, FWC, and other stakeholders.

This process is meant to be flexible and iterative. For example, a given location may only make it through Step 3 during one annual cycle and be carried forward into further analysis in step 4 the following year. This process is also intended as a starting point for developing additional priorities. Information from other sources may be taken into account as appropriate, or as requested by USFWS or FWC.

Step 1. Identify potential locations for further evaluation.

a. Identify Planned Crossing Locations on the State Highway System (including at a minimum Districts 1, 5, 7, and Florida Turnpike Enterprise).

b. Review projects in Long Range Transportation Plans (LRTP) that intersect hotspots.

c. Review the data layers in the Conservation Plan GIS database as identified in Table 1. *While all data layers are important for the overall identification of new priorities, an emphasis will be placed on existing PVM hotspots. FDOT will aim to keep this GIS database up to date (as a separate conservation measure outlined in the Conservation Plan). This GIS database may be modified as needed and/or as a result of the annual meeting with USFWS and FWC.*

d. Identify crossing locations that may require additional attention (e.g., PVCs still occurring on occasion – what adaptive management strategies might be appropriate at these locations).

e. Identify USFWS and FWC panther range expansion opportunities as documented in the Florida Panther Recovery Plan, Five Year Review, or the Species Status Assessment as those documents are finalized or updated.

f. Identify any future potential hotspots (could consider bear as a surrogate).

Step 2. For locations identified in Step 1 use the criteria to determine which locations will move forward for further analysis (note that over time, these conditions may need to be adjusted as certain hotspots or panther range expansion opportunities are addressed).

a. Locations from I-4 southward are higher priorities than those north of I-4.

b. Locations occurring within least cost path modeling outputs are higher priorities than those outside of these routes.

c. Locations occurring in panther conservation focus areas are higher priority than those outside of these areas.

d. Locations that fill gaps are higher priorities than those that do not.

e. Locations with telemetry data (panther, bear, other surrogates) may also be given a higher priority than those with less information available.

f. Locations where opportunities may be lost in the near future may be higher priority than those with less threat.

Step 3. For locations moving forward from Step 2, use these criteria to analyze the needs and challenges at each location. FDOT may consider using quantitative analysis for this step to filter locations that would be identified as suggested future priorities.

a. Are conservation lands/large private parcels with conservation easements currently in place?

b. Is the location within existing Florida Forever project footprints or areas on the Acquisition and Restoration Council priority list? If not, is there another "conservation opportunity" such as a landowner participating in the FWC payment for ecosystem services program?

c. Is the location identified in panther range expansion areas as documented in the Florida Panther Recovery Plan, Fiver Year Review, or the Species Status Assessment as those documents are finalized and/or updated?

d. What is the anticipated minimum structure size needed and can it be accommodate at the site?

e. Can adequate fencing be installed at the site?

f. What right of way impacts are anticipated?

g. What permitting challenges are anticipated (e.g., drainage design, wetland impacts, level of permitting required)?

h. Is the location in an "area of highest threat for future development" (2070 data)

FDOT may develop a Long-Range Estimate (LRE) to support recommendations moving forward from this step.

Step 4. For locations that appear viable from Step 3, and as time allows, conduct further analysis at each location to determine the proposed conservation measure using the list of "Conservation Measures to Address Identified Priority Locations" below. Consider if the location would support a retrofit or if it can be added to an upcoming transportation project.

Step 5. Summarize list of locations considered and highlight suggested locations to be added to Groups 2 or 3 of the current priority list.

Step 6. Conduct an annual review of existing and proposed priorities with USFWS, FWC, FDEP, NGOs, and other stakeholders as appropriate.

Conservation Measures to Address Identified Priority Locations

In general, FDOT will address priority locations in one or more of the following ways, starting in order of effectiveness. If the most effective solution is not feasible, FDOT will work down the list of solutions to select an appropriate option for the conditions of the specific location. The options below consider traditional wildlife crossing structures, but in some cases, innovative solutions may be available or more appropriate. This list may not be appropriate for locations where adaptive management strategies are being considered (e.g., funding for a Roadside Animal Detection system may be available much sooner than funding for a wildlife crossing). FDOT will provide justification/consult with USFWS if the most effective solution cannot be implemented (e.g., fencing length is a challenge, no conservation land connectivity) and/or an innovative or adaptive management solution is being proposed in order to come to an agreement on the appropriate solution per location.

- New wildlife crossing structure/reconstruct existing bridge to provide panther crossing along with the ideal length of fencing.
- New wildlife crossing structure/reconstruct existing bridge to provide panther crossing along with fencing but less than ideal length. Roadway signage. Nighttime speed limit reduction.
- Reconstruct existing bridge to provide panther crossing with no fencing. Roadway signage. Nighttime speed limit reduction.
- Reconstruct existing bridge to provide panther crossing with no fencing. Roadway signage.
- Road-side Animal Detection System (or similar technology) implementation.
- Fencing where a crossing is not feasible.
- Roadway signage and Nighttime speed limit reduction.
- Roadway signage.
- Roadway vegetation maintenance/management to increase visibility/reduce collisions.

Table 1
GIS Data Layers

Status	Data	Map Layer Name	Source
In Map	Panther Deaths	Florida Panther Mortality (FWC)	https://atoll.floridamarine.org/arcgis/rest/services/FWC_GIS/OpenData_FWSppLoc/FeatureServer/7
In Map	Panther Deaths	Panther Vehicle Collisions through 2022	Shapefile from FDOT (Brent)
In Map	Bear mortality	Black Bear Roadkill Locations (FWC)	https://atoll.floridamarine.org/arcgis/rest/services/FWC_GIS/OpenData_FWSppLoc/FeatureServer/3
In Map	Panther HotSpots	FDOT District One HotSpots	Shapefile from FDOT (Brent)
In Map	Panther Least Cost Paths	Florida Panther Least Cost Paths (FGDL)	https://taurus.at.geoplan.ufl.edu/arcgis/rest/services/fgdl/UCF_SPICE/MapServer/0
In Map	Panther Corridors	Florida Panther Corridors (FGDL)	https://taurus.at.geoplan.ufl.edu/arcgis/rest/services/fgdl/UCF_SPICE/MapServer/1
In Map	Current panther zones	Panther Habitat Zones Florida (FWC)	https://atoll.floridamarine.org/arcgis/rest/services/FWC_GIS/OpenData_FWHabitat/FeatureServer/35
In Map	Florida Wildlife Corridor (FEGN Priorities 1-3)	FEGN 1-3	https://conservation.dcp.ufl.edu/fegnproject/
In Map	Managed Conservation Lands (FNAI)	FL_Conservation_Lands_web (FNAI)	https://services.arcgis.com/9Ik4ZI9KofTtvg3x/ArcGIS/rest/services/FL_Conservation_Lands_web/FeatureServer/8
Need Data Layer	"Unmanaged" Conservation Lands		
In Map	Sector Plans	King Ranch Sector Plan	KMZ from FDOT (Brent)
In Map	Sector Plans	Rodina Sector Plan	KMZ from FDOT (Brent)
In Map	5-year work program - Planning	Planning Phase	https://gis.fdot.gov/arcgis/rest/services/Work_Program_Current/FeatureServer/14
In Map	5-year work program - PD&E	PD&E Phase	https://gis.fdot.gov/arcgis/rest/services/Work_Program_Current/FeatureServer/13
In Map	5-year work program - Environmental	Environmental Phase	https://gis.fdot.gov/arcgis/rest/services/Work_Program_Current/FeatureServer/9
In Map	5-year work program - PE	Preliminary Engineering Phase	https://gis.fdot.gov/arcgis/rest/services/Work_Program_Current/FeatureServer/15
In Map	5-year work program - ROW	Right of Way Phase	https://gis.fdot.gov/arcgis/rest/services/Work_Program_Current/FeatureServer/17
In Map	5-year work program - CON	Construction Phase	https://gis.fdot.gov/arcgis/rest/services/Work_Program_Current/FeatureServer/2
In Map	SIS second 5	Approved2nd5_2022	https://www.fdot.gov/planning/systems/programs/mspi/plans
In Map	LRTP	LRTP group	Emailed shapefiles from MPOs
Waiting on Data	Existing Wildlife crossings (OEM/Stantec to provide)		
In Map	FDOT District boundaries	district_bnd (FDOT)	https://services1.arcgis.com/O1JpcwDW8sjYuddV/ArcGIS/rest/services/District_Boundaries_TDA/FeatureServer/0
In Map	Counties	Counties (AGOL)	https://services.arcgis.com/P3ePLMYs2RVChkJx/arcgis/rest/services/USA_Counties_Generalized_Boundaries/FeatureServer/0
In Map	On-system	Active On the State Highway System (FDOT)	https://services1.arcgis.com/O1JpcwDW8sjYuddV/ArcGIS/rest/services/On_System_TDA/FeatureServer/0
In Map	Off-system roadways	Active Off the State Highway System (FDOT)	https://services1.arcgis.com/O1JpcwDW8sjYuddV/ArcGIS/rest/services/Off_System_TDA/FeatureServer/0
In Map	Max Speed Regulation	Max Speed (FDOT)	https://services1.arcgis.com/O1JpcwDW8sjYuddV/arcgis/rest/services/Maximum_Speed_Limit_TDA/FeatureServer
In map	Night time Speed Regulations	Night Speed Regulations	RCI - 5/17/2023
In Map	Wildlife Permeability Along Interstate 4 (PRIT)	Wildlife Permeability Along I-4 (PRIT)-(FGDL)	https://pisces.at.geoplan.ufl.edu/arcgis/rest/services/etdm_services/Wildlife_Crossing_Consideration/MapServer/1
In Map	Crossing Opportunities at large Animal Hotspots	Potential Crossings	Geodatabase received from GeoPlan Center (Sam Palmer)
In Map	Wildlife Hotspot Analysis	Large Animal Collision HotSpots	Geodatabase received from GeoPlan Center (Sam Palmer)
In Map	Florida Forever Acquisitions	FNAI - Florida Forever Acquisitions (FGDL)	https://taurus.at.geoplan.ufl.edu/arcgis/rest/services/fgdl/FNAI/MapServer/2
In Map	Florida Forever BOT	FNAI - Florida Forever BOT Projects (FGDL)	https://taurus.at.geoplan.ufl.edu/arcgis/rest/services/fgdl/FNAI/MapServer/3
In Map	Future Land Use	Future Land Use (FGDL)	https://capricorn.at.geoplan.ufl.edu/arcgis/rest/services/etdm_services/FLU_L2_2020/MapServer/0

APPENDIX F

Conservation Measures Funding Mechanisms Framework

Appendix F

Conservation Measures Funding Mechanisms Framework

Purpose

This document provides a framework for the various mechanisms the Florida Department of Transportation (FDOT), US Fish and Wildlife Service (USFWS), and the Florida Fish and Wildlife Conservation Commission (FWC) may consider or pursue to fund the conservation measures outlined in the FDOT Conservation Plan for the Florida Panther (Plan). While the mechanisms beyond FDOT's own funding processes are aimed at infrastructure related conservation measures or acquisition of conservation lands, potential partners and FDOT can consider supporting program related conservation measures through these funding mechanisms as well if appropriate.

Funding Mechanisms

FDOT Funding

As specific infrastructure related conservation measures are identified through the Prioritization Methodology (Appendix E), FDOT will coordinate internally to request state or federal funding in the upcoming Work Program budget cycle. FDOT may also pursue other forms of funding such as through the FDOT Research Office, FHWA grants or other grant opportunities, or through OEM environmental funds. Utilization of FDOT funds will follow the FDOT Work Program Instructions which are "are based on funding and policy directives from the federal government, the Executive Office of the Governor, the Florida Legislature, and the Florida Department of Transportation's (department's) executive leadership". Utilization of these funds will also follow any other laws, requirements or restrictions placed on them.

Local Government Funding

FDOT can enter into agreements with local governments through various means including "Locally Funded Agreements" and "Joint Participation Agreements". When FDOT and local governments are considering partnering to implement conservation measures related to this Plan, refer to FDOT Procedure Topic No. 350-020-301-I, Financial Provisions for All Department Funded Agreements, and FDOT Procedure Topic No. 350-020-300a. These procedures, along with discussions with Procurement and the Office of General Counsel will guide the decision-making process to determine if and how local funds may be used to fund conservation measures and/or how FDOT may be able to fund conservation measures local governments are pursing that support FDOT goals for the SHS through this Plan.

Private Sector or Non-Profit Funding

Similar to local governments, FDOT can enter into agreements with the private sector or non-profit entities (e.g., foundations) through public-private partnerships. A Public-Private Partnership (P3) is a contractual agreement between a public agency (federal, state, or local) and a private sector entity. Through this agreement, the skills and assets of the public agency and the private sector entity are shared in delivering a service or facility for the use of general public. In addition to the sharing of resources, each party shares in the risk and reward potential in the delivery of the service or facility. Section 334.30, Florida Statutes, authorizes the Department to enter into P3 agreements for the building, operation, ownership, or financing of transportation facilities. This statute, along with discussions with Procurement and the Office of General Counsel will guide the decision-making process to determine if and how private or non-profit funds may be used to implement conservation measures that these entities wish to purse in support of FDOT goals for the SHS through this Plan. Should a private or non-profit organization choose to provide funding to a local government who then wants to partner with FDOT, refer back to the Local Government Funding section of this document.

In addition to FDOT accepting funds from these entities, FDOT may contract with the private sector pursuant to Section 339.282, Florida Statutes, to finance, construct, and improve public transportation facilities through a Construction Agreement (see FDOT Form No. 850-040-89). As with the other options noted above, coordination with FDOT Procurement and OGC would be necessary if this route is being considered. Additionally, review by other FDOT offices (e.g., Design, Construction, Maintenance) would be required to ensure appropriate requirements are being met, as outlined in the Construction Agreement.

APPENDIX G

PHU Methodology

Appendix G

A CONCEPT AND METHOD FOR EVALUATING PANTHER HABITAT UNIT MITIGATION FROM NEW WILDLIFE CROSSINGS ON FLORIDA'S STATE HIGHWAY SYSTEM

FDOT District 1

Final Report

April 2023

1.0 INTRODUCTION

The U.S. Fish and Wildlife Service (USFWS) developed a panther habitat assessment methodology in 2006 to evaluate project impacts on the Florida panther. That methodology was revised in 2009 and again in 2012, recognizing that not all habitat types provide the same ecological value to panthers. Certain habitat types are thought to provide better denning, foraging, and dispersal habitat for the species. The current methodology uses habitat suitability values between 0 and 10, with 10 being an optimal habitat type for panther use.

In applying the current panther habitat methodology, the practitioner identifies the habitat types within the project area and their corresponding habitat suitability values from Table PM2 (USFWS, 2012). The practitioner then multiplies the proposed impact acreage for each habitat type in the project area by its habitat suitability value. The sum of the products is the number of panther habitat units (PHU), which is multiplied by a base ratio and a landscape multiplier to determine the final PHU required to compensate for the potential loss of panther habitat from a project area.

The USFWS developed the base ratio and landscape multiplier to ensure sufficient acreage of primary zone equivalent land is protected for a population of 90 panthers. The base ratio factors in the amount of available primary zone equivalent lands in 2006, the area of equivalent lands needed to sustain the panther population, the at-risk areas throughout the panther's range, and the need for new wildlife crossing features on Florida's roads.

The landscape multiplier factors in the locations of proposed impact and mitigation, with a higher multiplier assessed for projects that would impact the panther's primary zone and then provide mitigation outside of that zone. Conversely, a smaller landscape multiplier is applied when impacts occur in the panther's secondary or dispersal zones and mitigated for in the panther's primary zone. The landscape multipliers are provided in Table PM5 (USFWS, 2012).

2.0 BASE RATIO/WILDLIFE CROSSINGS

In the text describing the PHU analysis, USFWS (2012) states that increasing traffic can have an indirect effect and can contribute to panther mortality, highlighting the "need for road crossings in strategic locations." Wildlife crossings have been shown to reduce wildlife-vehicle collisions and increase animal movement. However, increasing traffic stems from traffic-generating development such as new residential or commercial development and not directly from road widening or improvements.

The USFWS's (2012) base ratio calculations assumed a panther habitat loss of 500 acres per year. This acreage equated to the average FDOT cost for a new bridge/box culvert ($3.6 to $5 million), which is the equivalent land value at $8,500

per acre. The 500 acres per year increased the total base ratio by 0.02. The higher base ratio was intended to incentivize the construction of new wildlife crossings in key locations (USFWS, 2012; FHWA, 2020). However, little evidence shows that the 0.02 base ratio component has had a measurable effect on the number of new wildlife crossings. Additionally, in 2018, the USFWS lowered the total base ratio from 2.5 to 1.98, including eliminating the portion of the base ratio incentivizing new wildlife crossings.

3.0 WILDLIFE CROSSING MULTIPLIER

A novel approach to incentivize the construction of new wildlife crossings is to add a new wildlife crossing multiplier for the lands immediately adjacent to a new wildlife crossing. The wildlife crossing multiplier would factor in the current habitat suitability value and the expected, higher habitat suitability value of the land immediately next to a new wildlife crossing. The assumption is that a new wildlife crossing will allow animals to more-freely migrate to habitat that can support essential behaviors such as breeding, feeding, and sheltering and would reduce the likelihood of panther vehicle collisions.

The ecological value of a new wildlife crossing can be quantified. FDOT has successfully used the Uniform Mitigation Assessment Method (UMAM) to evaluate the pre- and post- wetland values adjacent to a new wildlife crossing which demonstrated wetland functional gain. In another study, Sijtsma et al. (2020) evaluated the ecological benefits of the Dutch habitat defragmentation program, reporting that new wildlife crossings increased the ecological quality of the nearby habitat. In their study, 26 new wildlife overpasses were the ecological equivalent to buying 2,547 acres of habitat with a habitat suitability value of 10 or buying 5,094 acres of habitat with a habitat suitability value of 5.

FDOT proposes a modest 0.10 multiplier for any new wildlife crossing within the defined panther zones, accounting for the expected increase in panther usage, dispersal within the adjacent habitat, and the expected reduction in panther-vehicle collisions. For example, if the current pre-construction habitat suitability value near a proposed wildlife crossing equaled 1,000 PHU, the proposed post-construction habitat suitability value of that same land would equal 1,100 PHU (1,000 PHU + (1000 PHU x 0.10), a net benefit attributed to the new wildlife crossing. Larger wildlife crossing multipliers may be warranted near conserved lands and/or known panther road-kill hotspots.

4.0 ASSESSMENT

New wildlife crossings are known to reduce wildlife-vehicle collisions and restore landscape linkages, especially where existing roads have bisected natural habitats and historic migration pathways. Panthers habitually use the same travel routes to access parts of their home range, including preferred spots to cross highways (Land and Lotz, 1996). Reviewing GPS telemetry of panther movement and anecdotal evidence from FDOT-monitored wildlife crossing structures indicates that panthers habituate to the structures. Over time, panthers learn new, safe crossing locations and eventually increasing usage of these structures, which can improve the value of habitats within their home range.

The panther habitat impact and/or mitigation assessment area plays a critical role in determining the number of PHU “credits”. Determining the impact area is relatively straightforward: the area within the project footprint. However, determining the potential mitigation assessment area can be difficult, particularly for the Florida panther. An ad-hoc

analysis showed that the panther's home range is not an appropriate mitigation assessment area because it would vastly overstate the ecological value of a new wildlife crossing, which would be further complicated if multiple wildlife crossings occur in a panther's home range.

FDOT proposes an assessment area of 1,000 meters (3,280 feet) from the center of a new wildlife crossing, extending on both sides of the structure/roadway. The length of applicability would be determined by the length of new wildlife fencing or other wildlife barriers that would direct animals toward the wildlife crossing with a 500-foot minimum on both ends of the crossing. For example, if a project had 1,000 feet of wildlife fencing proposed on all four quadrants of a new wildlife crossing, the proposed panther mitigation assessment area would be approximately 300 acres [(1,000 feet x 2 sides) x (3,280 feet x 2 sides)/43,560 ft2] (Figure 1), or just 0.4% of a female panther's home range (75,000 acres).

If the FDOT could not incorporate preferred wildlife fencing at a new wildlife crossing, credit should still be realized from the lands adjacent to the structure. FDOT proposes a 500-foot minimum distance from each end (1,000' total) of a new crossing be applied to the mitigation area. Using the example above, approximately 150 acres [(500 feet x 2 sides) x (3,280 feet x 2 sides)/43,560 ft2] minimum of panther habitat would be enhanced by the new crossing. However, the FDOT concept would only allow a 10% enhancement to a small fraction of the panther's home range.

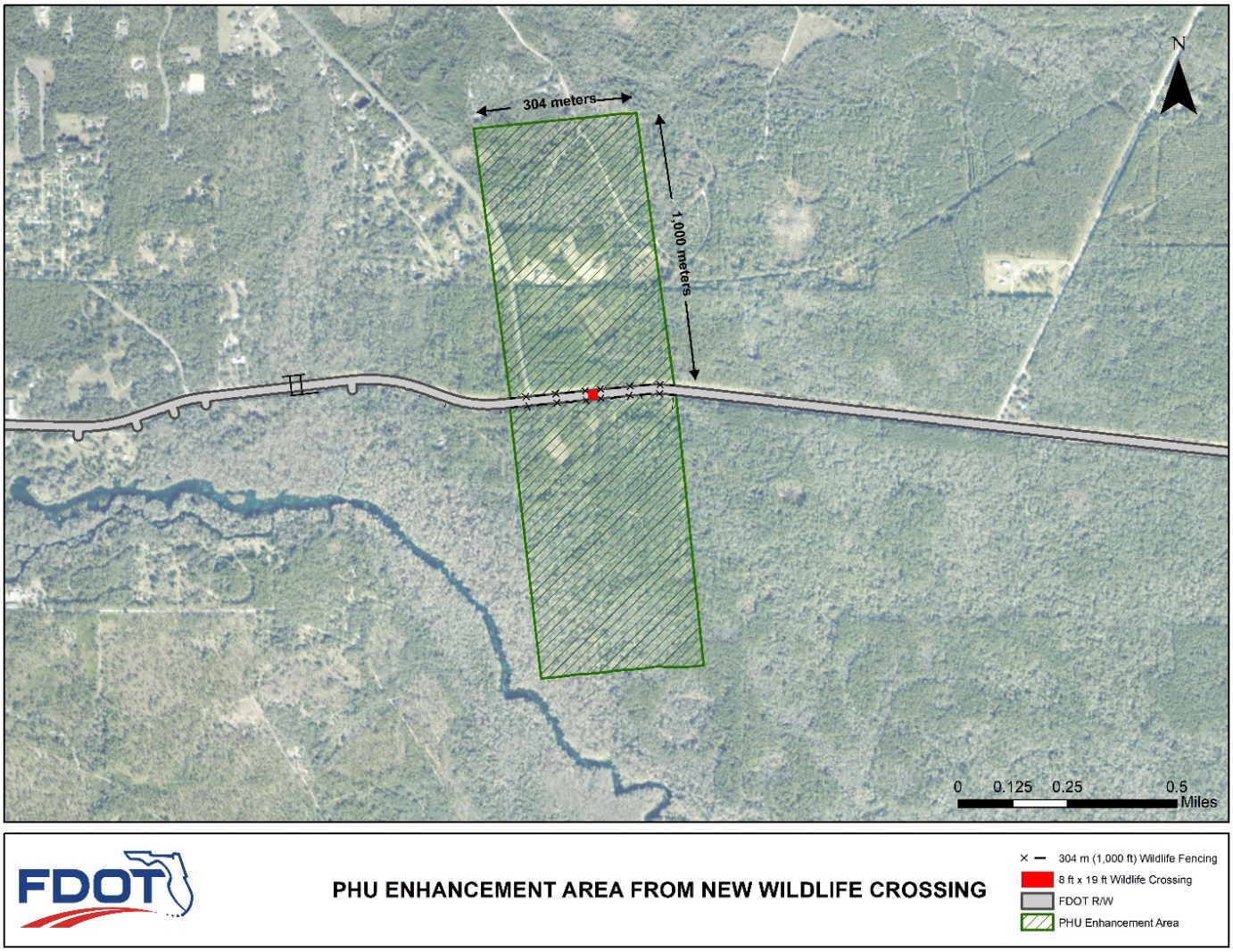


FIGURE 1 EXAMPLE PHU ENHANCEMENT AREA FROM A NEW WILDLIFE CROSSING WITH 304 METERS (1,000 FEET) OF NEW WILDLIFE FENCING.

5.0 PHU EXAMPLE

To better understand how this methodology would be applied, FDOT created a hypothetical project example: A two-to-four lane road widening project will impact 145 acres of land, including panther habitat in the panther's primary zone with a total land cover value of 197.9 PHU (Table 1) based on the USFWS's Panther Habitat Assessment Methodology.

TABLE 1. PHU ANALYSIS FOR A TWO-TO-FOUR LANE ROAD IMPROVEMENT PROJECT IN A PANTHER ZONE, USING LAND COVER VALUES FROM USFWS (2012).

Land Cover	FLUFCS	Land Value	Area (ac)	PHU
Urban	100, 800	0	90	0
Water	500	0	20	0
Orchards/Groves	211	4.7	20	94
Marsh/Wet Prairie	641	4.7	2	9.4
Shrub Swamp/Brush	631	5.5	3	16.5
Dry Prairie	310	6.3	5	31.5
Hardwood Pine	411	9.3	5	46.5
			145	197.9

The road improvement project includes a new wildlife crossing structure but no wildlife fencing so use the 500' minimum on each side of the crossing. The proposed wildlife crossing will reduce panther-vehicle collisions and improve habitat connectivity. The 3,280-foot (1,000-m) buffer from the proposed wildlife fencing yields a 150.6 acre panther enhancement area (Table 2).

TABLE 2. PHU ANALYSIS FOR A PANTHER ENHANCEMENT AREA FROM A NEW WILDLIFE CROSSING WITH NO WILDLIFE FENCING, WITH ORCHARDS/GROVES AS THE DOMINANT LAND COVER.

Land Cover	FLUFCS	Land Value	Area (ac)	PHU	0.10 PHU Multiplier
Urban	100, 800	0	5	0	0
Water	500	0	5	0	0
Orchards/Groves	211	4.7	100	470	47
Marsh/Wet Prairie	641	4.7	25.6	120.3	12
Shrub Swamp/Brush	631	5.5	5	27.5	3

Land Cover	FLUFCS	Land Value	Area (ac)	PHU	0.10 PHU Multiplier
Dry Prairie	310	6.3	5	31.5	3
Hardwood Pine	411	9.3	5	46.5	5
Total			150.6	695.8	70

Applying the 0.10 wildlife crossing multiplier from Section 3 would increase the existing PHU value of the enhancement area by 70 PHUs. In other words, the new wildlife crossing would only offset 39% (70.0/197.9) of the PHU mitigation required from Table 1.

There are project examples where the 0.10 wildlife crossing multiplier could offset all of the PHU required to mitigate panther habitat impacts. For example, if the project added one mile of wildlife fencing which increases the assessment area and the example land cover consisted of better quality panther habitat, the proposed method could generate 453.4 PHU or 230%% of the PHU needed from Table 1 (Table 3).

TABLE 3. PHU ANALYSIS FOR A PANTHER MITIGATION AREA FROM A NEW WILDLIFE CROSSING WITH ONE MILE OF WILDLIFE FENCING, WITH BETTER QUALITY PANTHER LAND COVER.

Land Cover	FLUFCS	Land Value	Area (ac)	PHU	0.10 PHU Multiplier
Urban	100, 800	0	20	0	0
Water	500	0	40	0	0
Orchards/Groves	211	4.7	315	1480	148
Marsh/Wet Prairie	641	4.7	70	329	32.9
Shrub Swamp/Brush	631	5.5	100	550	55
Dry Prairie	310	6.3	50	315	31.5
Hardwood Pine	411	9.3	200	1860	186
			795	4534	453.4

The excess PHUs (453.4-197.9 = 255.5) generated as a result of adding wildlife fencing and the resulting increased panther habitat value on either side of the new crossing provides an added conservation measure and net conservation benefit for the panther. At this time FDOT is not seeking to “bank” any surplus PHUs for future projects and instead any excess credits will be “credited” towards FDOT’s conservation measures for preserving the Florida Panther.

6.0 CONCLUSION

Wildlife crossings with or without fencing can reduce wildlife-vehicle collisions, improve animal movement, improve motorist safety, and enhance the functional value of panther habitats adjacent to the structures. Concurrently, FDOT and others recognize that wildlife crossings are expensive and can unintentionally impact panther habitats, including wetlands and ecologically valuable uplands. These impacts often require panther habitat mitigation, which can create additional expenses and lengthen permitting timelines for transportation projects. The current approach offers little incentive for transportation agencies to voluntarily include wildlife crossings into transportation projects.

FDOT presents a method for determining the ecological value of a new wildlife crossing for Florida panthers. In it, FDOT proposes not only evaluating the lost PHU value within the project's footprint but also the enhanced PHU value to land cover adjacent to new wildlife crossing structures. This method uses a 0.10 wildlife crossing multiplier similar to a landscape multiplier to determine the number of PHUs created by a new wildlife crossing, which can be used to minimize or eliminate the PHU mitigation needs for a transportation project.

7.0 LITERATURE CITED

FHWA (Federal Highway Administration). 2020. Valuing Wildlife Crossings and Enhancements for Mitigation Credits. Washington, DC. The National Academies Press.

Land, D. and L. Lotz. 1996. Wildlife crossing designs and use by Florida panthers and other wildlife in southwest Florida. Florida Fish and Wildlife Conservation Commission. Naples, FL.

Sijtsma, F.J., van der Veen, E., van Hinsberg, A. et al. 2020. Ecological impact and cost-effectiveness of wildlife crossings in a highly fragmented landscape: a multi-method approach. Landscape Ecol 35: 1701–1720.

USFWS. 2012. Panther Habitat Assessment Methodology. South Florida Ecological Services Field Office. Vero Beach, FL.